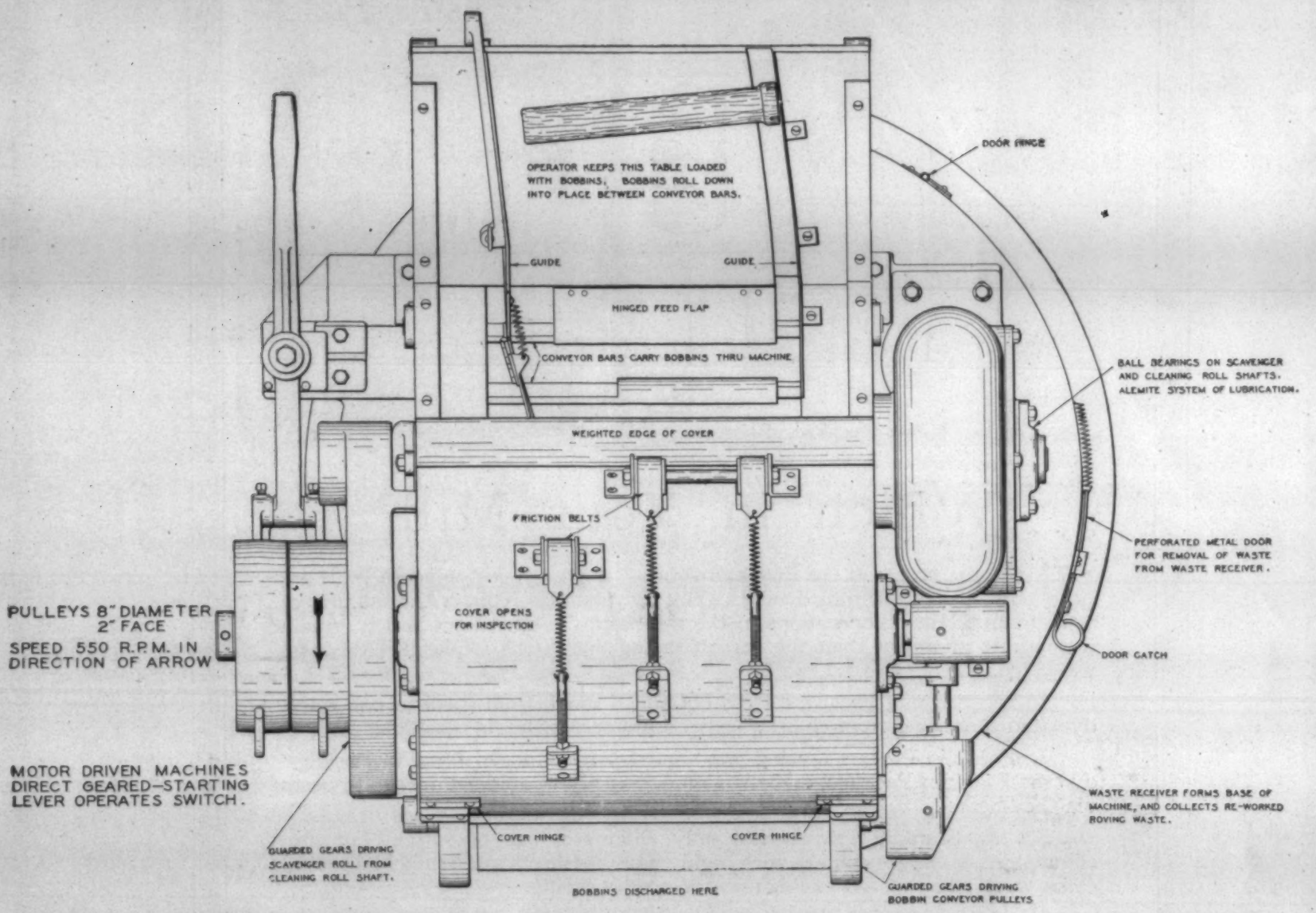
Better Equipment for Southern Mills

SOUTHERN TEXTILE BULLETIN

VOLUME 26 CHARLOTTE, N. C., THURSDAY, AUGUST 28, 1924 NUMBER 26

Will Your Mill Be Ready to Make the Best Possible Profit Margin?



Retail stocks of cotton goods have shrunk to new low levels. These stocks soon must be replenished to meet fall buying requirements of consumers throughout the entire country.

The consumer may like linens, silks and other fabrics, but cotton goods is more than a preference—*it is an absolute necessity.*

Many mills are now preparing to meet the demand that shortly will ensue, and meet it fully equipped to obtain a margin of profit which will cause present slack times to be quickly forgotten. If your mill uses roving bobbins, you too, will be interested in the Termaco, a roving bobbin cleaning machine that has cut operating cost over two thousand dollars annually, even where it was operated at considerably less than its full capacity.

Note the above diagram, showing top view of the Termaco. It gives an idea to the simplicity and sturdiness of the machine but does not show how much a Termaco will increase your profits by the savings it effects.

Without any obligation on your part to purchase a Termaco now or in the future, our Engineering Department will gladly figure for you the savings a Termaco will effect for your mill.

Have our Engineering Department figure the saving in labor, the saving in bobbins, the saving in roving waste, the saving by not cutting the staple, and certain other savings all effected by the Termaco.

Drop us a line today, asking for full information regarding the Termaco.

Every Machine Trademarked "TERMACO" is sold under a binding guarantee as to workmanship, material and OPERATION.

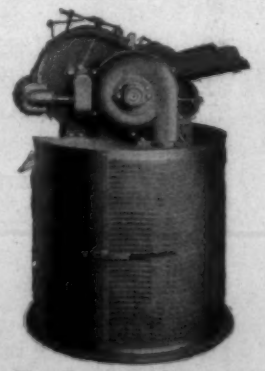
The Terrell Machine Co., Inc.

ENGINEERING DEPT. **CHARLOTTE, N. C.**

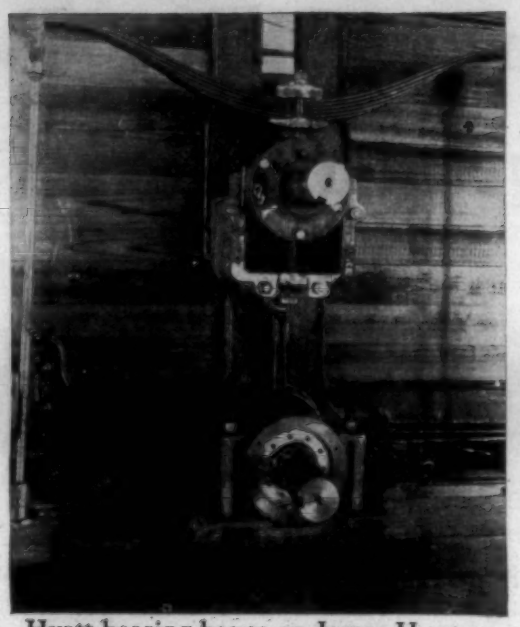
General Supply Co., Danielson, Conn., Rep. for N. Y. and N. E.

(*Northern Representative handles Complete stock of parts*)

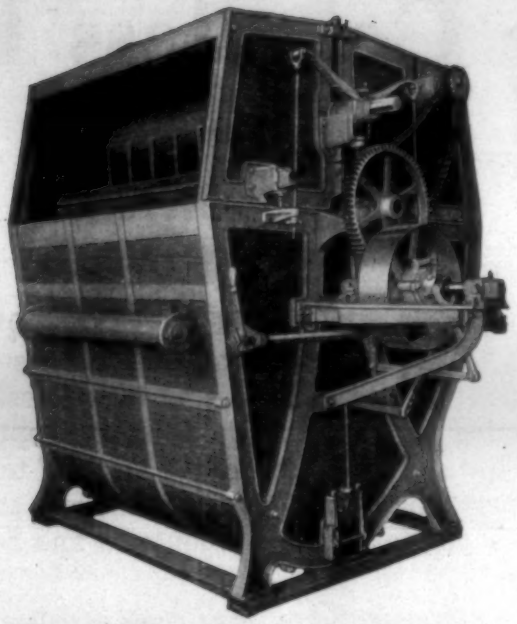
E. S. Player, Greenville, S. C., Agent for South Carolina



The Termaco cleans upwards of 30,000 roving bobbins each working day. No exposed gears to endanger operator. Ball bearings used on high speed shafting. All gears are cut gears. Heat treated steel used where necessary for long life. Each part made in jigs and templates to afford perfect interchangeability of parts. Ball bearings positively and easily lubricated by Alemite System. Simple and economical to operate and keep in perfect operating condition.



Hyatt bearing boxes on James Hunter Machine Company Washer. Cover plate removed from lower box to show the bearing.



Cloth washer manufactured by the James Hunter Machine Company, North Adams, Mass.

Eliminating Oil Spoilage And Cutting Operating Costs

The spoilage of goods by leaking oil is eliminated in Hyatt bearing washers and other finishing machinery, because the oil stays in the bearing housings.

For the same reason it is only necessary to oil Hyatt equipped machinery three or four times a year. This economy together with power saving of 25% to 30% and the elimination of bearing repairs and adjustments results in an attractive reduction in operating costs.

To secure these advantages and the general dependability of Hyatt roller bearings, it is not always necessary to wait until new machines are purchased. Replacement boxes containing Hyatt roller bearings may be had especially designed for many classes of finishing machinery. Installation of these bearings affords an easy way of modernizing your present equipment.

The James Hunter Machine Company, whose equipment is shown above, is prepared to furnish Hyatt roller bearings on washers and fulling mills.

A new illustrated book covering the application of Hyatt bearings to finishing machinery as well as to many other classes of textile machinery is now ready for distribution. Write for a copy.

HYATT ROLLER BEARING COMPANY
NEWARK DETROIT CHICAGO SAN FRANCISCO
HUNTINGTON PHILADELPHIA PITTSBURGH MINNEAPOLIS
WORCESTER BUFFALO CLEVELAND MILWAUKEE

HYATT ROLLER BEARINGS FOR TEXTILE MACHINERY

The Ceaseless Demand For Better Textile Equipment

During the progress of THE BETTER EQUIPMENT CAMPAIGN continued stress has been laid upon the advisability—**and the necessity**—of keeping abreast with the constant improvements being made in the larger kinds of textile machinery, in response to the industry's growing demands for greater production and better quality.

But almost every week sees some smaller but equally valuable improvement perfected, and in many instances these less heralded improvements offer a sure means of eliminating waste, reducing production costs and bettering quality at a small installation outlay.

It is not likely that any other industry is as continually and persistently undergoing research at the hands of expert chemical, mechanical and structural engineers as the textile industry; and it is obvious that from the devoted efforts of this earnest group of men must come, every now and then, improvements in machines and methods sure to exert a vast influence throughout the entire industry.

No mill is so big or so successful that it can afford to ignore the ever-advancing progress in the invention and development of efficiency and labor-saving devices, and no mill is so small that it cannot greatly profit by learning of and adopting some of these modern devices.

A review of even the past five years will reveal a long list of small inventions made by the men in the mill and machine shops—devices which were experiments a few years ago but which are now indispensable features in the equipment of thousands of big and little mills.

The subject of economy of operation is one of vital interest to every mill owner. It is human nature to ignore waste or excuse it. The importance of stopping profit leaks, here and there, becomes striking when you realize that **a saving of even** $10 a month equals a 6 per cent return on a $2,000 bond investment; many mills could save $10 a day—some could save $10 an hour, by the adoption of more efficient machinery and methods.

But what the South does as a section depends wholly on what is done **individually.**

Help To Keep The South Leading In Big Scale Production Of Quality Textiles

Better Equipment Campaign

This advertisement contributed to by the following firms:

Saco-Lowell Shops
Whitin Machine Works
H. & B. American Machine Co.
Fales & Jenks Machine Co.
Woonsocket Machine & Press Co.
Whitinsville Spinning Ring Co.
Crompton & Knowles Loom Works
Lestershire Spool & Mfg. Co.
The Stafford Co.
The Dana S. Courtney Co.

Fletcher Works
Easton & Burnham Machine Co.
Ashworth Bros., Inc.
Terrell Machine Co.
U. S. Bobbin & Shuttle Co.
Brown-St. Onge Co.
Mossberg Pressed Steel Corp.
S. K. F. Industries
John Hetherington & Sons, Ltd.
Textile Mill Supply Co.

Charlotte Mfg. Co.
Howard Bros. Mfg. Co.
B. S. Roy & Son Co.
Hopedale Mfg. Co.
Carrier Engineering Corp.
Barber-Colman Co.
The Root Co.
R. I. Warp Stop Equipment Co.
Hyatt Roller Bearing Co.

The Bahnson Co.
Link-Belt Co.
Cooper-Hewitt Electric Co.
Parks-Cramer Co.
Steel Heddle Mfg. Co.
H. W. Butterworth & Sons Co.
Fafnir Bearing Co.
Franklin Process Co.
T. C. Entwistle Co.

SOUTHERN
TEXTILE BULLETIN

PUBLISHED EVERY THURSDAY BY CLARK PUBLISHING COMPANY, 39-41 S. CHURCH STREET, CHARLOTTE, N. C. SUBSCRIPTION $2.00 PER YEAR IN ADVANCE. ENTERED AS SECOND CLASS MAIL MATTER MARCH 2, 1911, AT POSTOFFICE, CHARLOTTE, N. C., UNDER ACT OF CONGRESS, MAR. 3, 1879.

VOLUME 26 | CHARLOTTE, N. C., THURSDAY, AUGUST 28, 1924 | NUMBER 26

Roving and Filling Bobbin Cleaners

By the Terrell Machine Company.

THE advantages of what may be termed "Standard Equipment" for cotton mills have been widely advertised and are generally understood.

There are, however, machines which are not classed as standard equipment, some of which present opportunities for even more remarkable savings than can be claimed for machines of standard type. It is well to exercise care at all points of manufacture and to reduce to a minimum the amount of waste produced, but it is even more highly essential that in the later processes, after considerable labor has been added to the raw material, to eliminate every possible pound of waste because with each operation the loss becomes increasingly greater. Among other specialty machines the two mentioned below offer unusually large returns when installed under proper conditions, and the statements given below are made from actual results secured as the result of much effort to obtain exact figures. A firm of engineers was employed and given a list of several representative mills from which to select an average installation of the Termaco roving bobbin cleaner, and their figures have been carefully checked to avoid possibility of error.

Following the description of the savings made by the Termaco roving bobbin cleaner appear extracts describing the savings both specific and general which the Utsman automatic loom bobbin cleaner has made in a number of representative mills located in various sections of the United States.

The Termaco report follows:

Cleaning roving bobbins by hand is an expensive process, and any mill using this method is overlooking an opportunity to save a good deal of money. The Wamsutta Mills of New Bedford, Mass., have found that a Termaco bobbin cleaner pays for itself every four months.

The Termaco machine has reduced the roving waste 40 per cent, which saves 9,750 pounds per year. This amounts to $1,170 annually. Since the Termaco machine does not cut the staple, it saves 20 per cent of the roving waste, which was formerly thrown out by the carding machines. This saving amounts to $1,706.12 per year.

By eliminating the splintering of bobbins, the Termaco cleaner saves the cost of 6,000 bobbins each year, which amounts to $342.

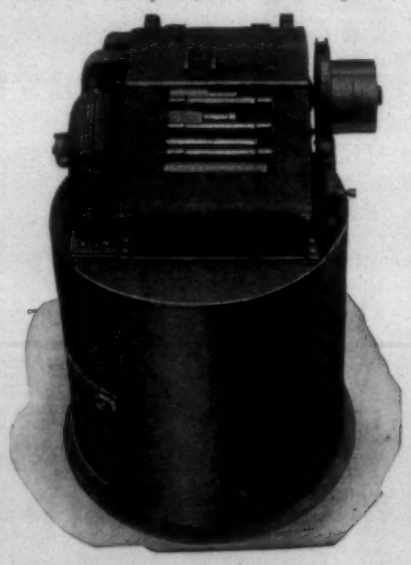
The gross annual saving of $3,218.12 is more than three times the operating cost of the machine, and the net annual saving represents a yearly return of 314 per cent on the investment.

The complete story of Termaco success is given in the following pages by G. R. Goodwin, overseer of No. 6 Ring Spinning Mill. A study of this survey will show other mills how they, too, may increase their profits.

Termaco Bobbin Cleaner Saves $2,275.03 Annually.

Mr. Goodwin reported as follows:

About two years ago, we installed a Termaco bobbin cleaner in our No. 6 Ring Spinning Mill and we were so well pleased with its operation and with the advantages and saving derived from its use that we purchased a similar machine for our No. 5 Mill about a year ago. The machine in No. 6 Mill cleans 7-inch and 8-inch fine roving bobbins and some of the 10-inch intermediate roving bobbins.



Termaco Bobbin Cleaner

Since our No. 6 Mill has 44,000 spindles, there are 88,000 fine roving bobbins in use. This mill runs 48 hours per week. The roving bobbins remain on the spinning frame creels from one and one-half days to nine days, depending on the yarn being made. The yarn varies from No. 16 to No. 56, although the largest amount is No. 34, No. 36, and finer. About 75,000 fine roving bobbins are used in the spinning frames each week, and all of these are cleaned by one Termaco machine.

Controls Amount of Roving Waste.

Each spinner watches about 2,500 roving bobbins and makes a round every 30 to 35 minutes. When one layer of yarn or less is left on a bobbin, it is removed and tossed into a truck near the machine. These trucks full of empty bobbins are collected regularly and taken to the Termaco machine. Each truck load is marked with the number of the roving man who brought it to the cleaner and also with the machine numbers. All bobbins having more than one layer of waste are taken back to the spinning frames and run again. In this way we maintain direct control of the amount of roving waste obtained. This is very important.

One boy easily operates a Termaco cleaner. His duties include pushing the trucks to the machine, feeding the bobbins into the machine, removing the trucks after the bobbins are cleaned, removing the waste from the machine, and cleaning the machine twice a day. The cleaner runs about 36 hours a week, which is 75 per cent of the time. Since it cleans 75,000 bobbins per week, its average production is about 2,100 bobbins per hour, although it is capable of handling considerably more than this amount.

Smooths Old Bobbins.

The Termaco machine is equipped with ball bearings and is sturdy and well built. It has required practically no repairs, except for the replacement of the card clothing and the cylinder. As shown on the accompanying cost sheet, the total operating cost, including depreciation, average interest, repairs, power, and labor, amounts to $493.08 per year. This is only $.38 per hour or about $.24 per 1,000 bobbins. We consider this cost very low.

The machine does excellent work. The waste which it delivers is well carded and in good condition, and the bobbins are not injured by the cleaning; in fact, the machine even smooths up the old splintered bobbins which had been injured by hand cutting.

Saves 9,750 Pounds of Waste Per Year.

The Termaco cleaner has effected several important economies. In the first place, it enables us to keep our roving waste at a minimum. When the spinners cut the waste from the bobbins, it is difficult to control the amount obtained, and it often runs as high as 5 per cent. Even with the closest supervision, we could not keep lap and roving waste below 2½ per cent, which means that the roving waste averaged 1.25 per cent.

The Termaco Cleaner has reduced the roving waste to .75 per cent, which is a reduction of 40 per cent. Since our total weekly poundage is 37,500, the Termaco cleaner saves 187.5 pounds of roving waste per week. Since the average cost of manufacturing the roving is about $.12 per pound, the saving on the 187.5 pounds amounts to $22.50 per week, or $1,170 per year. This figure is very conservative, because a mill using the old method will usually exceed 2½ per cent lap and roving waste.

The Termaco cleaner effects another important saving, due to the fact that it does not cut the staple. When bobbins are cleaned by hand, many of the fibres are cut and these are later thrown out by the carding machines and lost. The percentage of loss varies with the length of the fibre, diameter of the bobbin, and amount of waste cut off, but it is safe to figure that this amounts to at least 20 per cent of the roving waste. This saves 93.75 pounds per week, which, at $.35 per pound, amounts to $1,706.12 per year.

6,000 Bobbins Saved Annually.

The saving in the cost of bobbins is another important item. When the waste is cut off by hand, the

bobbins become splintered and soon have to be discarded. Since the Termaco cleaner causes no wear on the bobbins, this expense is practically eliminated; in fact, if the Termaco cleaner were installed in a new mill, it would seldom be necessary to purchase any new fine roving bobbins. Bobbins which were bought when the machine was installed are still practically as good as new. The Termaco cleaner is saving at least 6,000 bobbins per year, which, at $57 per thousand, means an annual saving of $342.

As shown by the attached calculations, the total annual saving amounts to $3,218.12. Deducting the operating cost of the Termaco cleaner, there remains a net annual saving of $2,275.03, which represents a net annual return of 314 per cent on the investment. In other words, the Termaco cleaner pays for itself every four months.

Improves Quality of Yarn.

Relieving the spinners of bobbin cleaning work gives them more time to keep the ends up and the machines clean. This improves the standard of work in the spinning room and betters the quality of the yarn. We appreciate this feature very much because all our products are of the highest quality.

Cost of Operation of Termaco Bobbin Cleaner.

Depreciation—$725.00 ÷ 20 years	$ 36.25
*Average interest at 6%—$\frac{21\times\$725.00\times.06}{20\quad 2}$	22.84
Maintenance and repairs	40.00
Power	64.00
Labor—one boy $15.00×52	780.00
Total cost per year	$943.09
Cost per week—$943.09÷52	$ 18.14
Cost per hour—$18.14÷48	.38
Cost per 1,000 bobbins—$18.14 ÷75	.24

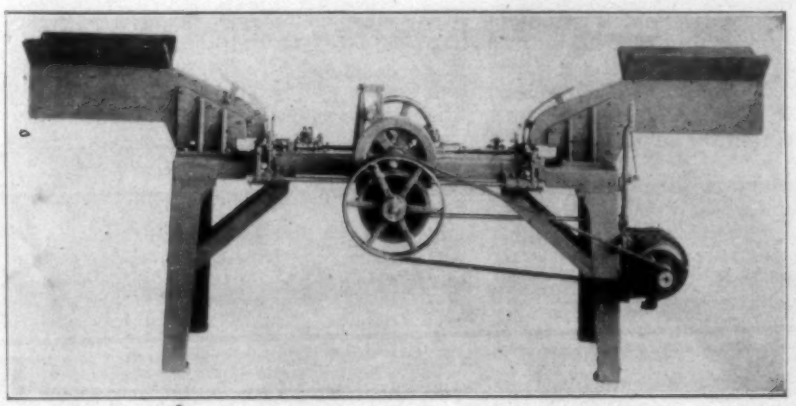
*Allowing for interest earned by depreciation reserve.

Savings Effected by Termaco Bobbin Cleaner.

Savings in waste—		
Total poundage per week (lbs.)	37,500	
Roving waste without Termaco	1.25%	
Roving waste with Termaco	.75%	
Saving in roving waste	.50%	
Pounds saved per week—37,500×.50% (lbs.)	187.5	
Average cost of manufacturing roving per lb.	$.12	
Saving in roving waste, per week—187.5 lbs. @ $.12		$ 22.50
Saving in roving waste, per year—$22.50×52 weeks		1,170.00
Saving by Not Cutting the Staple—		
Roving waste per week Without Termaco—37,500 lbs.×1.25% (lbs.		468.75
Loss by cutting staple—468.75 lbs.×20% (lbs.)		93.75
Savings per week—93.75 lbs. @ $.35 lbs.		$32.75
Saving per year—$32.81×52 weeks		$1,706.12
Saving in Bobbins—		
Number of bobbins saved per year		6,000
Saving—6,000×$.057		$ 342.00
Total gross annual savings		$3,218.12
Cost of operating Termaco cleaner		943.09
Net annual saving		$2,275.03
Net annual return on investment		314%

The Termaco bobbin cleaner repays its cost every four months.

The Utsman bobbin cleaning machine, which is for use with automatic loom bobbins of the Northrop type, makes no attempt to reclaim the waste which is removed from the bobbins, as chief savings occur in the reduction of labor required to clean bobbins, in the lessening of damage to the bobbins to a minimum, and from the fact that the cleaning operation is centralized at one point and can therefore be supervised and accurate information obtained regarding the amount of waste produced.



Double End Utsman Feeler Bobbin Cleaner

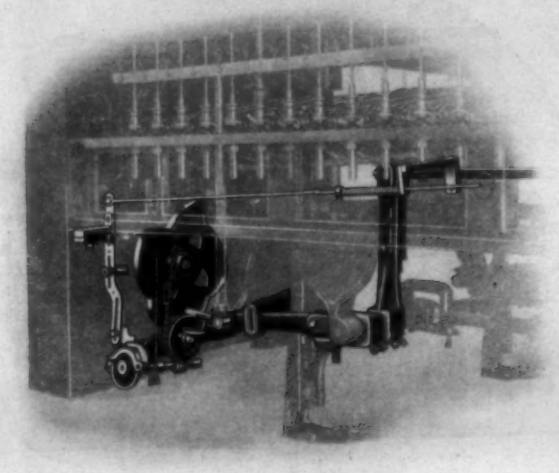
The machine is built in two sizes, a single-head and a double-head, each head having capacity of approximately 4,000 bobbins per hour and requiring the services of one operator. Either type may be furnished either with belt drive or direct motor drive. The increased efficiency of the use of this machine depends to some degree upon the type of yarns being made, coarser yarns presenting the best opportunity for showing large savings in labor, and finer yarns offering advantages in the saving of bobbins and the reduction of waste.

One prominent mill states that two of these machines are saving them over previous methods of doing this work $1,665 per year, these being single-head machines. Another mill states that the machine is saving them services of two men. Still a third advises that the saving approximates $18 per week.

There have been instances where a large installation resulted in a saving of approximately twenty-five employees, but installations of this size are not frequent and the average saving per machine is approximately two employees per head. Figuring the daily wage as low as $1.50, this represents $900 for a working year of 300 days, and to this sum must be added the saving and bobbins waste, which are secured through better control.

Whitin Bunch Builder

By the Whitin Machine Works.



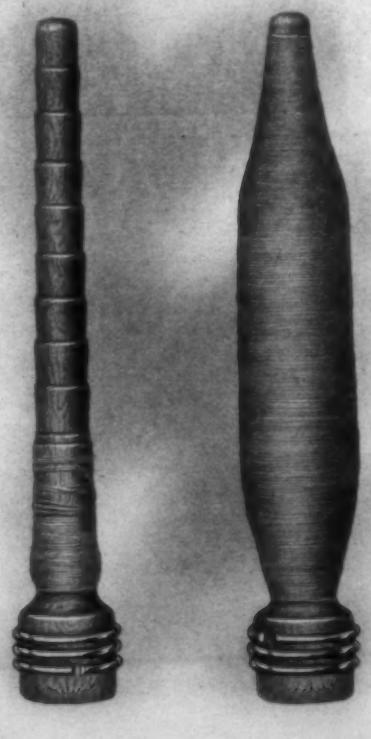
Whitin Bunch Builder

IN the spinning and winding of filling yarns for use in the shuttles of weft replenishing looms, the bobbins on which the yarn is wound may have an initial winding which is termed the "bunch." This winding extends for a predetermined distance upwardly from the bottom of the bobbin, and is necessary for the purpose of providing an engaging element which acts in conjunction with the loom "feeler" mechanism whereby the filling replenishing mechanism is brought into action prior to the complete exhaustion of the yarn on the bobbin in a running shuttle.

The yarn that remains on a bobbin of this kind after it has been ejected from the loom following the action of the filling replenishing mechanism constitutes waste and consequently it is desirable that the "bunch" should contain as little yarn as possible consistent with its function.

The Whitin Bunch Builder amply fulfills the necessary requirements of a properly wound bobbin. The mechanism is of a durable and inexpensive construction, and when properly adjusted requires no further attention from the operative. It is easily attached to old or new spinning frames, filling winders, quillers and wool spinners of Whitin make, and patterns are in preparation for application to other makes of similar machines.

A trial installation will furnish convincing proof of the value of this mechanism.



Bunch Winding **Full Winding**

Waste due to bunch averages only ten yards

Lighting As a Part of Better Equipment

By the Cooper-Hewitt Electric Company.

RAPIDLY the center of gravity of the textile industry is shifting Southward. The South is feeling it. New England and the North Atlantic States concede it. The movement has taken on the proportions of a definite economic trend.

The reason is that which underlies all the major movements in business. Some textiles can be manufactured more economically in the South—and economy in manufacture is the real secret of profit in this highly competitive field. Only a few specialty fabrics have the ghost of a chance to control their price in the market, and even these exceptions are not immune to the recurring fluctuations in the market price for staple goods.

Lower cost of manufacture has put the South definitely on the industrial map. Mills are moving into newly constructed buildings with new modern equipment which is in itself sufficient to place some of the older Northern mills at some disadvantage. Construction engineering is being backed up by production engineering; Southern plants are being planned so as to provide every possible producing economy. No one wants to be found wanting when full production pressure is put on.

What are the factors that will keep for the South the advantages that are attracting industry? Name them off—nearness to ample hydro-electric power, cheaper real estate, nearness to raw material, lower labor cost, both to operate and to build. That about sums it up. And the question arises: Just how long will the South possess the advantage in each of these particulars?

Nearness to raw material, until Kingdom Come, probably. Cheaper real estate and cheaper labor only so long as it takes to reach a certain stage of development. For when the textile industry has become accustomed to making and marketing on the basis of Southern labor and Southern ground rent, those cost levels will be the basis of most competition—just as Northern labor and Northern ground rent always have been.

That day may be far off—or it may be near. The chances are that it will come not far in the future—probably about the time the world market for textiles is re-established. Once the normal demand is restored—it must be remembered that the demand has not been normal for nearly ten years—these Southern mills, of which so much is expected, are going to be called upon for production that is bound to mean rapid readjustments of both labor and real estate costs.

That leaves the Southern mills with proximity to raw material as their one inalienable asset. But the North matches that with nearness to market. All things considered, it is plain that the security of the textile industry in the South must be founded upon something more substantial than a mere change of scene.

"Better Equipment for Southern Mills" comes in strong at this point. As you build to cut costs, equip also to cut costs. Use automatic machinery wherever you can, and take a leaf from the book of the automobile industry when you lay out its installation in your plant. Straight-line production is as big an asset in the textile business as it is in the automobile business—perhaps more so because cost margins are not so flexible.

There will be pleasant days, storm days, cloudy days—the long days of summer and the short days of winter, there will be times when the mill must run nights over long periods of time. These are not mere probabilities, but certainties—facts as plain and accountable as capacity per machine, or horsepower per ton of fuel consumed. Rain or shine, day or night, the mill must be ready to produce. It is no aesthetic creation geared to function at its best only when conditions are ideal.

The real object of mill lighting should be to maintain a steady rate of production, through all times of the day and year. Anything less than that is merely a concession to carelessness, because mills can be lighted so that production can be maintained. Some of the leading mills in the North have found that the ability to operate at night, with a day-time level of efficiency, has meant the difference between adding new plants and equipment and adding none at all.

Think of the cotton mill lighted, during the hours when daylight fails, so that every end on every loom and spinner is not instantly and clearly visible. Calculate the time lost while operators pause to adjust the eye to a low intensity of light, and heavy black shadows. Contemplate what chances there are for faulty fabrics to get through the looms.

Light the weave room and the spinning room so that every detail in thread or fabric stands out sharply. That means evenly diffused and light of practically uniform intensity, and the best visual quality and visual quality means seeing power. To the outsider, any lighting system is merely "illumination;" to the man or woman at work, it is seeing power.

Absence of glare is prerequisite to seeing power. Elimination of heavy black shadows, in fact the practical elimination of all shadows in which detail is not clearly visible in next in importance. Keep glaring light sources out of the operators' field of view. All they ask is that light reveal their work and not offend their eyes.

One specialized industrial light, Cooper-Hewitt work-light, answers these exacting requirements and stands out in this field. Its success in general factory lighting is due as much to the quality of its light as well as to the quantity of light each given unit provides. The quality is distinctive with this light, which uses mercury vapor as the illuminating agent and so produces light which is nine-tenths composed of green and yellow rays—the "seeing" rays in all light. Red rays, causing heat and fatigue, are not produced in light which uses mercury vapor as the illuminating agent.

The diffusion which is so necessary in mill lighting is obtained through the use of a tube, fifty inches in length, from all points of which the light diffuses evenly, causing it to "flow" around obstacles such as posts, pillars, machines and workman. The tube is really as much the secret of this light's success as the elimination of red rays, inasmuch as the long, light-giving surface removes all possibility of glare such as is inescapable in bulb units, in addition to the advantages it has in diffusion.

Lighting will well repay all the study mill men can give it. Light determines the efficiency of practically all other equipment, and as such means more than illumination: it means insurance of returns on the major investment, building and machines. It affects quantity, quality and dependability of production. Its effect upon the spirit and actual health of labor is obvious.

Plan your construction, your materials, your machines—then plan your lighting according to your equipment layout. Letting it go as "something that can be cared for afterward" saves neither time nor

(Continued on Page 35)

Night Photograph of Southern Blue Denim Weave Room with Cooper-Hewitt Work Light.

Card Clothing Produced in Charlotte Plant

THE Charlotte Manufacturing Co., which is the only card clothing manufacturing concern in the South, and the Textile Mill Supply Company, both of Charlotte, have just completed one of the most modern buildings of its kind in this section. The two companies are operated by the same individuals.

The home of the Charlotte Manufacturing Company is of particular interest because this is a concern which has gone into competition with manufacturers in England and in New England and has made good in a large way. Since its establishment the business has been enlarged eight different times.

Discussing the inauguration of the firm's business and the manner in which it extended its activities, an official of the Textile Mill Supply Company says:

"The new firm started under great difficulties. Southern-made reeds even at that time were no novelty, but when it came to Southern-made card clothing—this was a different matter. Sporadic attempts at making card clothing in the South had not proven satisfactory. Southern mills as well as Northern mills were convinced that card clothing could not be made properly outside of England or New England.

"The members of the new firm were satisfied that as good card clothing could be made in Charlotte, N. C., as in England or New England. It was right and proper that they should believe this, but not worth anything unless they could convince mill owners that this was the case.

"Obstacles and arguments to overcome were many and various. Objections by men who were asked to buy the goods were numerous. 'You are an experiment. We cannot afford to experiment with a thing that means as much as this.' 'You cannot get men experienced in work like this to come to small towns to live.' 'You say if the goods are not right, we will get our money back, but what about the loss in production when we are taking off defective card clothing? What about bad work that may go through and mean loss of reputation for the mill's product; aside from any financial loss?

"And then our friends came to the front. The man who wrote 'Money can buy anything' was either a fool or a liar, maybe both. Money cannot buy friendship.

"These friends decided to take a chance, not because they were banking so much on our goods, but because they had faith in us. Whether we have justified that faith or not, we do not know. They seem satisfied, but we are not. We are keeping on plugging, working, striving all the time to make our goods better.

"During the war we could not buy machines for making card clothing, either in this country or in England. The mills were running under forced draft and had to have card clothing to keep on running. We had built in Charlotte 20 card clothing machines, strong, sturdy loyal machines, not so fast, perhaps, as some of the others, but just as reliable. 'Not much,' you say, '20 machines.' No, but just enough to show what could be done right here in Charlotte."

The Textile Mill Supply Company bought the Southern Card Clothing & Reed Company of Charlotte in 1910 and in 1911 the concern was incorporated under the name of the Charlotte Manufacturing Company.

Following are the officers: P. L. McMahon, president; R. G. Spratt, vice-president; Fred W. Glover, secretary-treasurer.

South African Imports of Cotton Manufacturers.

Imports of cotton manufacturers into South Africa during March, 1924, were valued at £686,336 of this total, the value of piece goods amounted to £374,913; blankets and rugs were valued at £100,514; cotton hosiery was worth £31,150; and cotton underclothing was valued at £65,238.

Laundry Research and the Textile Industry

Extracts from Address by George H. Johnson before Textile Section, American Home Economics Association.

FEW people realize the importance or size of the modern laundry industry of the United States. According to the latest census there are some 6,000 power laundries in this country representing an investment of $153,000,000, and growing steadily year by year. The laundry industry is planning to attain a business volume of $500,000,000 in 1925 and one billion dollars in 1930. When we remember that today laundries are doing scarcely more than 10 per cent of the available laundry business of the country it is apparent that the progressive and efficient laundry owner is working in an unlimited field of endeavor. His future depends entirely upon himself.

Now there also is very little doubt but that the laundry of the past is largely responsible for the prejudice that the average housewife today has against the industry. Neither can it be denied that methods of the past—obsolete now, be it remembered—were extremely destructive to clothes. But it did not take the progressive laundry owner long to see that something was wrong and that if he wanted to grow he must improve his methods. Thanks to a little group of launderers in Pittsburgh, known as the Allegheny County Laundryowners' Exchange, the services of a competent chemist were secured and laundry research work commenced.

Later the Laundryowners' National Association, quick to realize what a chemist could do for its members, took charge of matters and established a Research Fellowship on Laundering at Mellon Institute, University of Pittsburgh.

That was eight years ago. Since that time a great deal has been learned. Supplies and laundering methods have been studied. The most efficient detergents have been found, and the dangerous or ineffective ones driven from the market. Washing formulas have been worked but that will clean clothes the best and harm them the least. Sterilization of clothes has been studied, until today it is an established scientific fact that the washing formulae recommended by the Department of Research of the Laundryowners National Association will destroy any common disease bearing germ that preys upon humanity. A relentless war has been waged on quack compounds, many of which are positively injurious to textile fibres.

Then attention was turned to the material being handled — fabrics. Again a lot has been learned. Research discovered that the frequently maligned laundry is not responsible for certain defects which develop in textiles during the laundering process. It found that the wearing and laundering qualities of a garment depend largely upon the inherent properties of the textile material of which it is made. Research also discovered that frequently the customer himself can injure his linens irreparably, and that many household preparations and medicines are positively corrosive to cotton, linen, rayon, silk and wool if allowed to dry upon them.

The result of all this work has been the publication of two books, one called "A Manual of Standard Washroom Practice" and the other "The Conservation of Textiles." Every member of the Laundryowners' National Association has these two volumes and, it is to be hoped, has studied them carefully. Just at present another enlarged and revised edition of "Standard Washroom Practice" is at press. It is only a matter of weeks before this will be in the hands of our members and additional information will be brought before them.

However, the industry is still willing to learn for it realizes that only a beginning has been made. Science never stands still. The laundry Fellowship at Mellon Institute and the American Institute Laundry at Joliet, Ill., are proof enough that the laundry owner is still seeking for information. The laundry at Joliet, supported by laundry owners of the National Association, is an experimental unit in the one sense and yet is a practical commercial laundry in the other. It is a national institute of which great things are expected.

And now let us consider a few of the practical textile problems that the industry is facing today when handling its patrons' clothes.

Table Linen.

This is a type of fabric that has given trouble not only to laundries, but to housewives as well. Holes will suddenly appear and to the casual observer their appearance is a mystery. And in many cases it is. However, weaving sometimes has a great deal to do with the wearing qualities of table linen. From the start we must remember that the one-up and one-down or plain weave is the strongest weave we have, due to the intimate interlacement of warp and filling. Table linen is woven in many cases with a satin weave, in which a warp thread passes over four picks and under one. Oftentimes they are carried over more than four picks, as eight, ten ,twelve or even more, all for the production of a certain woven design. And in many cases this is where our trouble begins. If

(Continued on Page 28)

Too Many Reports, Says Commission House

The market letter of the Hunter Manufacturing and Commission Company says:

"We have had too many crop reports this season. They have added to the confusion and have tended to disturb trade rather than help it. We hope that another year we may go back to the previous system of monthly reports.

"At the beginning of the week, it seemed as if over-night buyers and sellers both had become convinced that the crop was to be at least one million bales larger than the Government estimate of two weeks ago. Offerings appeared on the market in greater volume and though buyers retreated, sales, especially of standard print cloths, were forced at ¼ to ⅜ cent below prices current only a few days previous. Gradually, during the week, the market has been regaining its poise, and although buyers are very largely inclined to defer purchases until next week, so that they may see Saturday noon's crop report, there has been a slight improvement in prices. The closing level, however, is below last week's.

"Although market sentiment had distinctly turned by the middle of July, we have had only two weeks of really active business since then. The rest of the time has been largely given up to guessing on and waiting for crop reports. A very large volume of prospective buying has been put off from day to day and week to week, and is only waiting now for a little clearer view of the crop situation and a little more confidence in prices. The volume is ahead of us without any doubt, and it is only a matter of a few weeks before we feel it. Manchester, England, reports very much the same state of affairs in that market.

"Western buyers who are in New York at the present time say that the tone in the West is much more optimistic than they find it in New York, but they feel that the tide of improvement is rolling from the Western farm country to the industrial centers of the East.

"We called attention last week to irregular conditions in the grey goods situation, which have become even more marked since then. In several different directions stocks have been cleaned up, and there, prices have been holding their own and maintaining practically in full the advance scored by the first of August. In other cases where stocks are still above normal, prices have receded.

"The list of favored goods includes shoe trade constructions, both drills and twills, narrow print cloth yarn constructions, certain sheetings for the rubber and automobile trades, a few of the bag constructions, the print cloth yarn fancies, etc. The standard print cloths and the majority of the medium yarn sheetings are not yet out of the woods.

"There has been a moderate movement of denims and ticks and decidedly more inquiry for low end chambrays and ginghams, although the larger inquiries have mostly been at unworking prices.

Child Labor and Apprenticeship

The strenuous advocacy of the new Child Labor Law by the labor unions of the country on the plea that it assured to the children and the youth of the land equality of opportunity for education and for preparation for a more useful and happier life is a worthy theme and an argument with which any right thinking American would find it hard to disagree, but how about the attitude of these same unions toward these same young men the moment they have finished their school days? Are they also insistent for equality of opportunity for preparation in the particular trade or craft which he elects to take up as a life work? Are they as willing and as helpful to assist the young man to become a skilled plumber, carpenter or mason as they were that he should, as a boy of fifteen or sixteen, be kept in the school room?

The known attitude of the craft in the building trades stamps them as utterly inconsistent in this matter. They may be insistent that the education of the young man should be continued into the ages of seventeen and eighteen years, but they are wholly unwilling that upon the completion of his schooling he shall be admitted to an apprenticeship in their craft. The education, which is provided for at the expense of the general public, and toward which the corporations and the business men are enormous contributors, is not supplemented by co-operation on their part by helpful assistance into the ranks of skilled crafts.

If a good common school education makes a youth a better man and a more valuable citizen why should he not also be entitled to continue his life in usefulness by being afforded opportunity to learn the craft of his own bent and choosing? The clean collar jobs for which the more advanced public school education presumably fits the young men are often unremunerative and offer a more restricted outlook for success than those callings which employ the skilled manual worker.

The labor unions of the country should consider well the result of their attitude on this question. Their restricted apprenticeship rules in many trades are absolutely reprehensible and work a great injustice in thousands of individual cases. It is un-American and unpatriotic and merits the condemnation of every man and woman.—Pennsylvania Manufacturers' Journal.

Fancy Yarns

By the Whitin Machine Works.

IN the manufacture of some varieties of dress goods fancy yarns are sometimes required. These yarns are composed usually of two or more threads twisted together in a predetermined manner to give the desired effect in the cloth being woven.

The component parts of a fancy yarn may differ in a number of features, viz.: counts, quality of material, twist per inch, direction of twist, and delivery ratio of the different components. A good knowledge of yarns and the influence of twist on yarns compounded together is necessary to obtain satisfactory results.

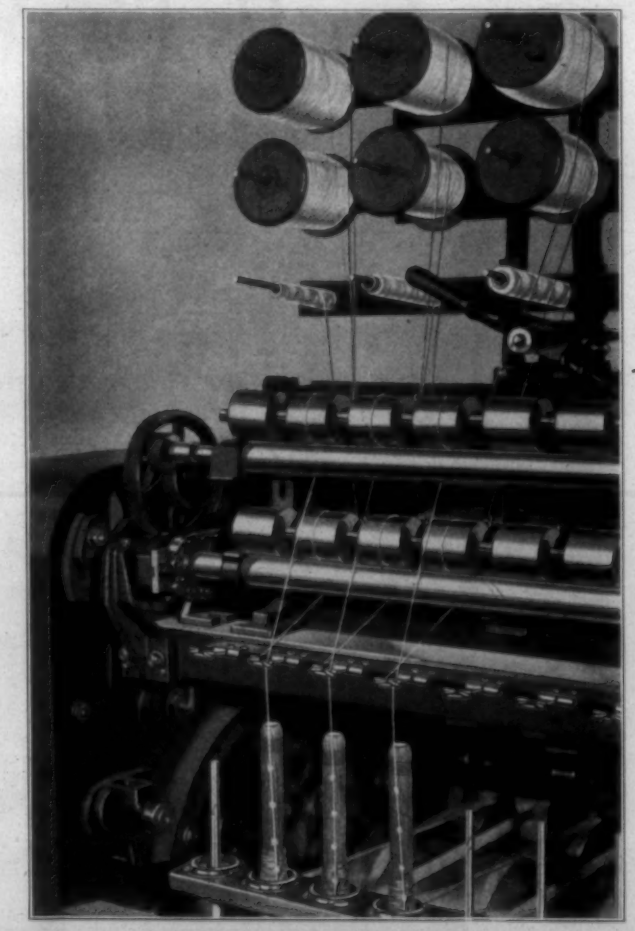
Where a small quantity of yarn is required these yarns may be made, in an economical manner, on the ordinary spinning and twisting frames, by proper manipulation of the gearing, rolls and guides; but where a larger quantity is required, it is advisable to employ a machine specially fitted for the purpose. With this object in view, we have designed and placed on the market our fancy yarn machine which has proven, by repeated installation, to be particularly adapted for the manufacture of many styles of fancy yarns.

As will be seen by reference to the illustrations, the machine comprises two sets of rolls, one above, the other held in bearings fastened to rigid uprights bolted to the roll beam of the ordinarily constructed twisting frame. The upper set of rolls delivers the main thread to a guide and thence through traveler and ring to the twisting spindle, while the lower set of rolls delivers the auxiliary thread, which forms the nubs or bunches on the main thread, by winding thereon at predetermined intervals. The upper rolls have an intermittent rotary motion, thus varying the delivery of the main thread, whilst the lower rolls have a continuous rotary motion delivering the auxiliary thread through a guide and thence being wound onto the main thread forming a bunch at each stoppage of the upper rolls and then being twisted into the main thread in the spaces between the bunches.

The relative movements of the two sets of rolls are controlled by means of a traveling pattern chain made up of a number of low links with one or more riser links. The riser links acting in conjunction with a shifting lever disengages the clutch which transmits motion from the lower rolls to the upper rolls, thus stopping the delivery of the main thread; consequently, the auxiliary thread, whose delivery is continuous, is twisted into a bunch on the main thread, the size of the bunch depending on the duration of the disengagement of the clutch.

By varying the length of the chain and the number and positions of the riser links, a large variety of combinations may be had.

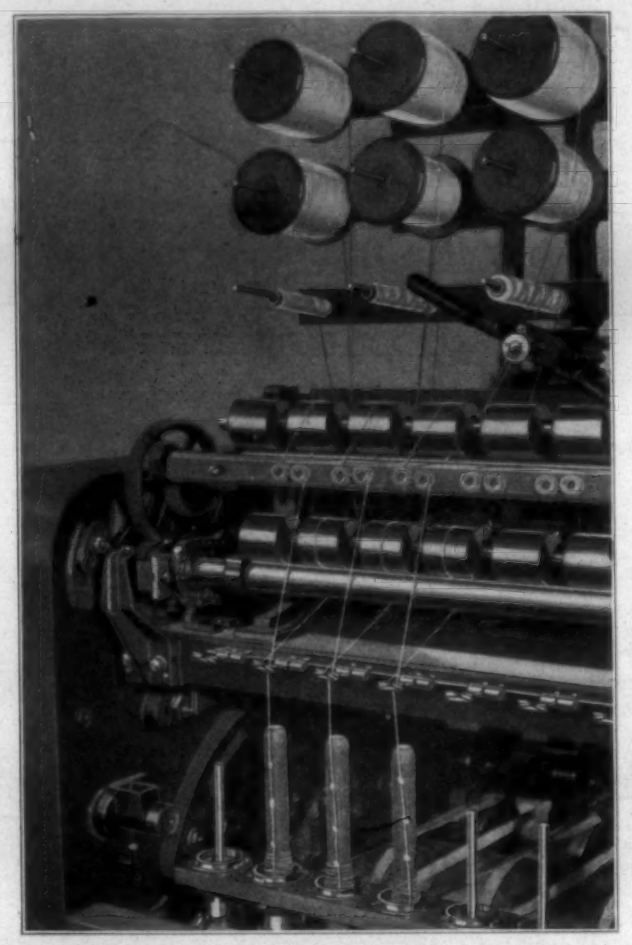
In some types of fancy yarn it is of the greatest importance that the



Fancy Yarn Machine with Tension Bar

main thread be delivered under a proper tension in order to derive desired results. Where this is desired, the machine may be provided with porcelain knobs fastened to a wooden bar located in front of the upper set of rolls. The requisite tension is imparted to the thread by one or more turns about the knobs.

The machine as above described is only adapted for making nub and flake yarns, but by disconnecting the chain, thus continuously running both set of rolls at requisite delivery ratios and using proper arrangements of thread guides with particular attention given to the tension and twist, other styles of fancy yarns may be readily made.



Fancy Yarn Machine without Tension Bar

Complete Textile Investigation in New England

Fall River, Mass.—A. H. McCarrell and Andrew Coulthart, textile experts of the staff of the U. S. Tariff Commission, who have been engaged since Wednesday gathering data relating to the textile depression, will conclude their labors in this city tmoorrow and leave for the Carolinas, where they will conduct similar investigations in Charlotte and Greenville.

Their reports will subsequently be filed in Washington.

Mills in Rhode Island and New Bedford were visited by the Tariff Commission representatives before coming to this city. The work of the visitors is part of an extensive program to have tariff rates based on up-to-the-minute economic facts to suitably arrange the tariff.

The experts are not delving into production costs primarily, but are interested in piece-rate wages paid to weavers on typical fabrics for comparison with prices abroad. Information is also sought on all factors entering into the production and marketing of cotton goods.

"American mills can produce just as high quality fine goods as are made abroad," say the experts. "But they cannot do it economically with foreign labor working for from 40 to 50 per cent of American wage levels. The result, as we have found it, is that American fine goods mills are shading a little on quality goods, and are gradually coming into competition with domestic coarse goods mills.

"Foreign goods are subject to certain tariff rates," say the experts, "but these rates are not as effective as were originally planned, owing to the fact that exchange rates amount to an average of 10 per cent off the duty.

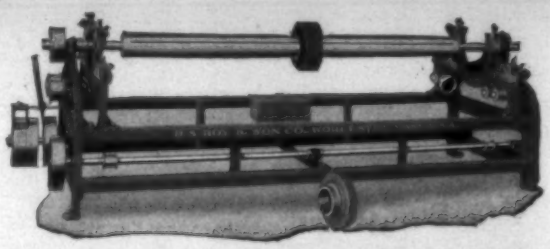
"This investigation may or may not lead to a readjustment of tariff rates," they say. "We are merely to report textile depression and foreign competition facts as we find them and then the Tariff Commission will have entire charge of the matter."

Roy Grinding Machinery

By a Representative of B. S. Roy & Son Company.

B. S. ROY & SON CO., of Worcester, Mass., have specialized since 1868—fifty-six years—in the manufacture of grinding machinery for textile mills. They manufacture grinders for woolen and cotton cards, garnetts, napper rolls and calender rolls which are standard throughout the trade. The Roy improved napper roll grinder illustrated below is to be found in hundreds of mills in this country as well as South America, Japan, China and India.

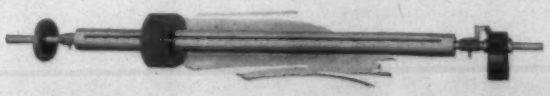
The frame is the well-known Roy heavy pattern style. The heads are adjustable for grinding any width of rolls within the extreme capacity of the machine.



There are two grinding wheels, one for surface and one for side grinding; the surface grinding wheel is a regular iron self-oiling wheel, covered with emery; the side grinding wheel is made of fourteen 12-inch diameter emery disc wheels, mounted on self-oiling hub. The two wheels are interchangeable, one being used at a time to grind two rolls at the same time. While two rolls are being ground in the two upper bearings, four more rolls, which have already been surface and side ground, are run "back to back" in pairs in the two lower pairs of bearings and burnished, making six rolls in operation at the same time.

As napper rolls usually require a very long grinder, we do not recommend using a traverse grinder with shell less than 5½-inch diameter to avoid springing out of true.

The Roy cotton card grinders illustrated below are made for any make of revolving flat cards. A complete set consists of two traverse and one roller grinder. Single grinders are furnished if desired.



Traverse Grinder Specifications—3-inch diameter steel shells, steel traversing screws, hardened steel shafts, grinding wheels with closed sides and fitted with spring, dog, wipers and oilers, fitted for and covered with grooved emery fillet, sleeve bearings at journal ends, driving pulley. Brass poppet head bushings furnished when necessary.

Roller Grinder Specifications—All steel grinder with patented balancing heads, hardened steel shafts, patented reciprocating motion, driving pulley, roller fitted for and covered with grooved emery fillet. Poppet head bushings furnished when necessary.

Many years ago the Roy concern realized the importance of paying special attention to repair work. They have a department devoted exclusively to the overhauling of grinders sent into be repaired. They realize that the average mill does not carry extra grinders on hand and keeping this in mind at all times, all repair work is put through without delay, usually being on the way back to the customer in about a week after being received. Specializing as they do in grinding machinery, they are in a position to repair all makes of grinders.

Southern Textile Exposition

The final plans for the entertainment of exhibitors and visitors at the Sixth Southern Textile Exposition were made at a meeting of all committees held in Greenville, S. C., August 26. The committees having charge of the various phases of the Exposition are practically the same as those having charge of similar work in 1922 and previous years. Their experience and interest in the work insures the success of the coming Exposition.

Exhibitors will be made to feel at home for the time they begin the work of installing their goods and visitors will also receive a warm welcome.

Arrangements were made for not only the business end of the Exposition, but for the social side. There will be a number of entertainments and receptions as in previous years.

Members of the Southern Textile Association will be specially provided for. The large room known as the "Mezzanine" in Textile Hall has been provided by the management as a club room for the entire week. The convention committees of the Chamber of Commerce and of the Exposition will co-operate with the Greenville Textile Club in furnishing this club room as a place for rest and relaxation for visiting members of the Textile Association.

Faults and Remedies in Combing

DISCUSSING cotton combing equipment, L. J. Mills, in an article in The Textile Recorder, summarizes the following faults and remedies:

Many of the faults in connection with cotton combers are common to any type: Heilmann. Nasmith, Whitin, and so on, but it will generally be apparent from the nature of the causes whether they refer to all types or only one type.

Single and Double. — The term "single" means that the final combed sliver is much too light in weight owing to a lap having run out at the back; an end broken in one of the condensing pans, or on the front table; cotton lapping on a feed roller; part of the cotton licking round one of the drawing-head rollers; combed web lapping round the back top or bottom detaching rollers. All roller laps should be pulled off, not cut off.

"Double" is a term which means that the resultant sliver is much too heavy, such as when an end, especially that from the first head, has broken on the table (causing single at first), then doubled back on itself and carried forward to the drawing-head by the other ends of sliver.

All single and double should be removed from the coiler tin, but continual vigilance is necessary to prevent laxity on this matter. It is advisable to have a supply of combed sliver in a tin under the front table ready for putting up to the draw box when single occurs, as by this means the fault can often be prevented from reaching the coiler tin.

Ends Breaking on Front Table.—Too little or too much humidity in the atmosphere, notably after the week-end stoppage; waste on cylinder needles; bottom detaching roller binding in bearings; quadrant cam worked loose; cut laps; feed rollers not driven properly; clutch-box slipping or engaging too soon; clutch-box cam or the bowl badly worn. Condensing pans, trumpets and table should be kept well polished and free from any slight projections or roughnesses. All the laps on the comber should be of different sizes to prevent two or more laps running out too close together.

Curling.—Short top fluted piecing roller not parallel with the bottom detaching roller; fluted segment and bottom steel detaching roller not moving at exactly the same surface speed during detaching and attaching; faulty leather detaching rollers; atmosphere too dry or too damp; faulty piecing during attaching; dirty or rough table; insufficient draught between calender rollers and drawing-head; dirt in flutes of detaching rollers. The end furthest from drawing-head gives most trouble.

Cutting Across.—Dirt under nipper knife; nipper spring too tight or too slack; too long an overlap during piecing; top comb set too deep in the cotton; top back detaching roller not rotating properly; top comb of a Nasmith comber too far (more than 1-16 in.) from the back detaching roller caused by cotton lapping round either top or bottom back detaching roller and forcing comb out of position; thick and thin places in lap; comber clutch box closing too early; waste returning to cylinder needles owing to a defective air current; fan shaft binding, or belt slipping when using aspirators; annular wheel worked loose; uneven lap owing to incorrect taker-in wheel, excessive draught or bad roller settings at sliver lap machine; "flats" on top rollers, or top rollers hesitating to revolve when starting ribbon lap machine; web of cotton tensioned excessively when passing from front rollers to table calender rollers of ribbon lap machine; frog lever not engaging correctly with the notch wheel owing to cam having slipped out of position; detaching roller end wheel loose on key; nipper knife touching edge of leather-covered cushion plate instead of being clear by about 1-32 in. when nipper is in combing position; clearer strings of draw box strayed under the lifting a top roller; laps running slack at one end on lap rollers; top feed roller not in line with bottom feed roller.

Long Fibres Passing to Waste.—Defective skimming-up of the leather detaching roller, i. e., removing too much leather at some parts and not enough at others, and thus causing hollow rollers; careless application of leather to cushion plate; conical laps; detaching rollers reversing too early; laps not running straight; cylinder needles broken, bent or hooked; hard tuft of cotton or bit of seed wedged in groove of nipper knife or on leather covering, thus preventing the nippers from properly gripping the cotton; feed roller not parallel to cylinder; some of the parts disturbed from their correct settings and timings; inefficient passing forward of fibres gripped by leather detaching roller and fluted segment; excessive weight on the leather detaching roller, especially on wide heads. The bite between the nippers should be even throughout, and which may be tested by placing three narrow strips of tracing cloth at the ends and middle of nippers; then, with the nippers closed, any part found defective in grip can be remedied by carefully scraping remaining effectively gripping parts of leather.

Detaching Rollers Lapping. — Leather detaching rollers on a Nasmith comber may lap owing to a poor top clearer; varnish rubbed off back top leather detaching roller by the brass guide between detaching rollers; oil escaped on to the leather-covered boss; rollers badly worn or too rough; clearer cover slightly knocked out of correct shape.

Thick and Thin Places in Web.—Leather detaching rollers short of oil; nipper-knife spring broken or come off on Nasmith comber; cam slipping at gearing end; baffle-plate of aspirator fan set too wide; slivers on table too slack.

Cotton Not Coming Through.—Pawl not gearing properly with

(Continued on Page 30)

SOUTHERN TEXTILE BULLETIN

Member of Audit Bureau of Circulations
Member of Associated Business Papers, Inc.

Published Every Thursday by
CLARK PUBLISHING COMPANY
Offices: 39-41 S. Church St., Charlotte, N. C.

THURSDAY, AUGUST 28, 1924

DAVID CLARK ..... Managing Editor
D. H. HILL, JR. ..... Associate Editor
JUNIUS M. SMITH ..... Business Manager

SUBSCRIPTION

One year, payable in advance $2.00
Other Countries in Postal Union 4.00
Single Copies ..... .10

Contributions on subjects pertaining to cotton, its manufacture and distribution, are requested. Contributed articles do not necessarily reflect the opinion of the publishers. Items pertaining to new mills, extensions, etc., are solicited.

ADVERTISING

Advertising rates furnished upon application.
Address all communications and make all drafts, checks and money orders payable to Clark Publishing Company, Charlotte, N. C.

Three Down and Ten to Go

BY a vote of 34 to 4 in the Senate and 86 to 7 in the House, the North Carolina Legislature passed the following resolution:

"Whereas, the people of North Carolina, firmly believing in the preservation of the rights remaining in the several States and entirely confident that they have in force State laws providing fully for the protection of the youth of the State, are unalterably opposed to this unnecessary surrender of further power to the national Congress;

"Now, therefore, be it resolved by the Senate, the House of Representatives concurring,

"Section 1. The General Assembly of North Carolina does hereby reject and refuse to ratify the amendment to the Constitution of the United States proposed and submitted to the several States by the Sixty-eighth Congress of the United States."

At the same time the North Carolina Legislature amended the State law so that no child under 14 years of age can work in a factory.

Georgia, Louisiana and North Carolina have rejected the amendment.

Arkansas, with a candidate for President, was persuaded that it would aid him if they ratified before the Democratic Nationaal Convention. Arkansas would today reject the amendment.

The Massachusetts Legislature referred the matter to a referendum vote.

Governor Kendall of Iowa found so much opposition from the farmers that he was afraid to submit the matter to his special session, although he had previously boasted that they would ratify.

No other legislatures will meet until January, 1925, but 42 will meet then, and a great battle of socialistic centralization of government vs. states' rights will be fought out in January and February.

Our Dope

MUCH "dope" is being sent out by the cotton men and cotton goods buyers relative to the future of cotton prices and we will join the other "dope" dispensers and make the following prediction:

Cotton will not materially decline from present prices before the middle of September because of the possibility of equinoctial storms.

Between September 15th and October 15th a heavy movement will be under way, especially in Texas and Oklahoma, States that do not hold their cotton, and the lowest price of the season should be reached early in October. We doubt, however, if it will go as low as 20 cents.

After October 15th the heavy selling movement will pass and there will be some advance in prices.

After January 1, 1925, the next crop will be taken into consideration with the realization that the low prices of this fall have insured a reduced acreage for 1925 and that another season such as we have just had is not likely to again prevail.

The price will again go above 30 cents and should bad weather prevail in the spring of 1925 much higher prices will prevail.

This is our "dope" but only time can tell whether or not it is correct.

We know that farmers can not raise cotton profitably for 25 cents per pound and we firmly believe that prices will not long prevail below that price.

The farmers of the South have always been accustomed to carry from 1,000,000 to 1,500,000 bales upon their farms and as all such cotton has been cleaned out they have an absorbing capacity to the extent of the above amount.

The farmers are in a remarkably strong position in regard to holding cotton because not anticipating a large crop they have not borrowed much money and the banks of the South are ready and willing to make loans to those that wish to hold.

A price of 20 cents may be reached but is by no means sure, and the man or mill who tries to buy at the bottom usually gets left.

In our opinion it will be safest to "buy the market down," that is, purchase a fixed portion of the year's requirement at each cent or fraction of a cent decline and depend upon getting a low average rather than buying at the bottom.

Do not forget that the Southern farmers and the co-operatives are going to have something to say about prices.

Result of Curtailment

EVERYONE knows that American cotton mills have been idle or operating upon short time during the past twelve months but very few realize to what extent curtailment has reduced the output of cotton goods.

	1922-23 Bales of Cotton Consumed (000 omitted)	1923-24 Bales of Cotton Consumed (000 omitted)	Decreased Consumption Each Month in Bales	Decrease in Production of Cotton Goods in Pounds
Aug.	527	492	35,000	14,875,000
Sept.	495	483	12,000	5,100,000
Oct.	534	541	*7 000	*2,975,000
Nov.	577	531	46,000	19,550,000
Dec.	528	462	66,000	27,500,000
Jan.	610	577	33,000	14,025,000
Feb.	567	507	60,000	25,500,000
March	623	484	139,000	59,075,000
April	577	480	97,000	41,225,000
May	620	414	216,000	91,700 000
June	542	350	192,000	81,600,000
July	463	347	116,000	49,300,000
Total pounds curtailed				426,475,000

* Increase.

The table is based upon the fact that 425 pounds of cotton goods are produced from a bale of cotton and having the actual reduction of the consumption of cotton there can be no question relative to the reduction in the production of cotton goods and yarns.

The curtailment of American mills during the 12 months ending August 1, 1924, represents a reduction of 426,000,000 pounds in the production of cotton goods and yarns, or in other words, if the mills had run upon the same scale as during the previous year that additional amount of cotton goods would be held by mills and merchants today.

In the face of this enormous curtailment of production we find the farmers with from $1,000,000,000 to $1,500,000,000 increased purchasing power as a result of large crops and higher prices, and it is also realized that increased exports of cotton goods may confidently be expected.

In the face of such a situation there should be a marked improvement in the cotton manufacturing business and we predict that it will occur by the middle of October.

Mansfield Mills, Inc.
Lumberton, N. C.,
August 23, 1924.

Dear Mr. Clark:

I want to congratulate you on your very able fight against the child labor amendment, and for your general support of the Southern milling interests. We all owe you a great debt of gratitude.

I notice in your issue of this week that one of the leading textile journals recently contained this: "Undeniably existing lack of uniformity in child labor laws put certain States at a disadvantage."

I offer the following, which, possibly, this journal might offer to the lawmakers: Close up the ports of that State, because these give this State great advantage over those which have none. Close the immigration stations, because some of the States have none, causing an uneven distribution of immigrants, who compose so great a part of our common labor supply. Limit the corn grown per acre in certain States, because the fertility of other States is not so great, and they are thereby unable to compete in the corn market; and a thousand other ways in which certain States have the advantage over others in certain ways.

Yours truly,
H. B. JENNINGS.

Shall New Jersey Talk About South Carolina?

Charlotte, N. C.,
August 25, 1924.

Editor,
The Times,
Bayonne, N. J.
Dear Sir:

The following statement of Mrs. Lillian E. Feickert, president of the New Jersey Woman's Republican Club, has been very widely published:

"If New Jersey can help through ratifying the Child Labor Amendment to wipe out child labor in States like South Carolina and Georgia, where children as young as six and seven years are exploited in the cotton mills and kindred industries, and where so many of them have no childhood at all, we Republican women are going to do all in our power to see that this is accomplished."

It is a very unfair statement, for the facts are that for more than ten years South Carolina has not permitted any child under 14 to be employed in a manufacturing establishment. The same can be said of Georgia, except that they do allow special permits to be issued to orphans or children of widowed mothers entirely dependent upon them, after they become 12 years of age, but only 127 such permits were issued during 1923.

No Southern State except Georgia permits any child under 14 to be employed in a factory.

As Mrs. Feickert seems to be very

(Continued on Page 30)

Personal News

J. P. Eller has resigned as overseer of weaving at the Art Cloth Mills, Lowell, N. C.

W. L. Lomineck, of Seneca, S. C., has accepted a position at Thomaston, Ga.

J. W. Honeycutt, of Salisbury, N. C., now has a position with the Manetta Mills, Lando, S. C.

C. A. Singletary has resigned his position at Shawmut, Ala., to accept one with the Stark Mills, Hogansville, Ga.

D. C. Jolley has resigned as overseer night carding at the Greenwood Cotton Mills, Greenwood, S. C., to become overseer of carding at the Addison Mills, Edgefield, S. C.

H. E. Still has resigned as overseer carding at the Addison Mills, Edgefield, S. C., to accept a similar position at the Ninety-Six Cotton Mills, Ninety-Six, S. C.

Mrs. Joe S. Wray has resigned as superintendent of community work at the Loray plant of the Manville-Jenckes Company, Gastonia, N. C., and will teach in the South Gastonia School.

W. D. Smith, vice-president of the Globe Manufacturing Company, Gaffney, S. C., who recently moved there from Anniston, Ala., will soon begin the erection of a handsome home.

Anton Stastny, of Anderson, S. C., has received a patent for a loom check strap which he recently designed. The description of the patent states that it is very simple in construction and requires only a 16-inch strap, saving 6 inches on each strap and effecting a saving of 30 cents on each dollar spent for check straps.

John T. Hilton, a graduate of the Bradford-Durfee Textile School of Fall River, Mass., has been appointed associate professor of carding and spinning in the textile department at the State College, Raleigh, N. C., succeeding P. W. Price, who will continue with the college in another capacity. W. E. Shinn, a 1924 graduate of State, succeeds L. E. Lane, resigned, as instructor in carding and spinning.

Second Hand Attempts Suicide.

Griffin, Ga.—Just as the whistle blew to go to work Monday morning, Aubrey Hammond, 25 years old, second hand in the finishing department of the Georgia Mills Bleachery, East Griffin, attempted to kill himself by shooting with a .32 automatic pistol. The bullet took effect three inches above the left breast and passed through his body and on through the mattress and stopping against the floor under the bed. Doctors say he will get well if no complications set in.

Thomas Fuller, Jr., Returns to Charlotte.

Thomas Fuller, Jr., who was formerly connected with the Charlotte office of the Westinghouse Electric and Manufacturing Company, but who for the past ten years has been in the Atlanta, Ga., office, will return to Charlotte September 1. Mr. Fuller will be manager of the Charlotte office of the Westinghouse Company.

Electrocuted in Mill.

Gastonia, N. C.—O. E. Carothers, aged 33, division superintendent of the Southern Power Company and manager of the local sub-station, was instantly killed Tuesday afternoon by electrocution at the Parkdale Mills, while making some repairs in the test room of the mill.

A. T. Cloninger, assistant superintendnet, and R. L. Moore, mechanic, were in the room with Mr. Carothers, but were unable to explain how the tragedy happened. Mr. Carothers was working on the wires and the only intimation they had that anything was wrong was when his body suddenly became rigid. They pulled the switch and released his body. He breathed only once or twice after being released.

Mr. Carothers is survived by his father and mother, Mr. and Mrs. W. M. Carothers; his wife, one child, two brothers, Neil and Henderson, and three sisters.

Superintendents and Overseers

McIntosh Mill.

Newnan, Ga.

12,000 spinning spindles.

T. R. Lovern ..... Supt.
T. E. McWhorter ..... Carder
Golden Clark ..... Spinner
G. W. Christian
Twisting and Winding
J. W. Reynolds ..... Dyer
J. F. Williams ..... Master Mechanic

Buffalo Plant of the Union-Buffalo Mills.

Buffalo, S. C.

62,880 spinning spindles; 1,929 looms.

J. V. McCombs ..... Supt.
N. Winroth ..... Carder
C. M. Shelton ..... Spinner
J. Y. Moore ..... Weaver
E. V. Sterdings ..... Cloth Room
J. L. West ..... C. E. & M. M.
Jno. D. Jones ..... Local Mgr.

Prendergast Cotton Mills.

Prendergast, Tenn.

20,160 spinning spindles.

B. W. Bingham ..... Supt.
G. C. Swafford ..... Carder
H. P. Thomas ..... Spinner
I. G. Little
Night Carder and Twisting
J. C. Visage ..... Master Mechanic

MILL NEWS ITEMS OF INTEREST

Baltimore, Md.—The W. & J. Knox Net & Twine Co. have awarded humidifier contract for a complete installation for their mill here to the Bahnson Company, Winston-Salem, N. C.

Chattanooga, Tenn.—The Lyerly Hosiery Mills have been incorporated with a capital stock of $100,000 by W. B. Davis, G. H. Miller and Chas. A. Lyerly, Jr., and will establish a mill to manufacture women's hosiery.

Kannapolis, N. C.—The Cannon Manufacturing Company has purchased humidifiers from the Bahnson Company, Winston-Salem, N. C., to be installed in weave room of the Cannon Manufacturing Company, Concord, N. C.

Houston, Tex.—Work is progressing rapidly on the construction of the first unit of the Houston Cotton Mills, for which contract was recently awarded to the Standard Construction Company, of Houston, for $165,000. Contract calls for completion of the first unit, with machinery installed ready for operation on October 15.

Great Falls, S. C.—Republic Cotton Mills resumed full time operations Monday, running both day and night. For some time they have operated only three days a week, night and day shifts. The silk mill of the foregoing company continues to operate at full time.

Gainesville, Ga.—Stockholders of the Gainesville Cotton Mills will meet in Spartanburg on September 9 to consider a resolution by the board of directors recommending the liquidation of the company and the surrender of its charter and the sale of its property to another company bearing the same name and organized in another State.

Wilson, N. C.—The understanding here is that the negotiations to build in this district, a new mill by G. Lester Wilcox, is about completed. Mr. Wilcox is superintendent of the Granite Mills, Fall River, Mass., and the understanding is that he would produce similar type products as he has been making, in his new mill. The new mill is to cost about $500,000.

Hogansville, Ga.—The new Stark Mill is progressing well. While much of the machinery is erected, it is not all running, but gangs of men are fast getting everything in good shape. When this mill starts all its looms, it will be a modern plant in every respect. The great window space is all curtained throughout with sliding sheeting and makes the glare of sunlight pleasing to the eye.

A new well is being bored to supply water for the added population. This well is now over 300 feet deep.

Greenville, S. C.—The Monaghan plant of the Victor-Monaghan Company will probably resume full time operations on September 1. The mill has been operating four days a week for some time. It is likely that the other four plants of the company will resume full time work at the same time.

Union, S. C.—Plans are being prepared at the office of J. E. Sirrine & Co., Greenville, mill engineers, for the addition of a weave shed to the Excelsior Knitting Mills. This weave shed will cost in the neighborhood of $75,000, it was announced, and as soon as plans and specifications are completed, bids will be requested from contractors of this section. The Excelsior Knitting Mills recently increased their capitalization by vote of stockholders and directors from $500,000 to $800,000, as noted.

Corsicana, Tex.—Business men of Corsicana feel confident that this city will secure a second cotton mill, one of the several mills to be erected in Texas by New England mill owners, who admit the trend of the textile industry from the Eastern States to the South. A. R. Sharp, treasurer of the Sharp Mills, New Bedford, Mass., and Felix Rackerman, president of the Hamilton Mills, Lowell, Mass., recently inspected the Corsicana Cotton Mill and the oil fields of Navarra county as members of a party of textile men and engineers making a tour of Texas with a view to selecting suitable locations for textile mills. Members of the party were much impressed with Corsicana and the aid pledged in financing a mill here.

Spartanburg, S. C.—The Valley Falls Mill, near here, will be increased to three times its present size within the near future, it was announced Wednesday by the management.

The plans for the original building were drawn to permit of doubling the size of the plant, but it has been decided to expand on an even greater scale, it was stated.

Instructions have not yet been received from the New York office as to just what improvements and additions will be included in the expansion program.

Arcadia, S. C.—The work of installing water and sewerage facilities in the village at Arcadia Mill No. 1, which was started several months ago under the supervision of Lockwood, Greene & Co., was officially accepted as complete, according to C. F. McGrath, resident engineer.

At an expenditure of approximately $70,000, all of the operatives' houses were equipped with water and sanitary connections. A sewerage disposal plant was also included in the work to avoid contamination of the stream flowing through the village.

Natchez, Miss.—The Cotton Products Company has purchased a building which will be used as a storage room for cloth and which will probably be equipped later for the manufacture of shirts.

Abbeville, S. C.—An additional cloth room is being staked out at the Abbeville Cotton Mills and work on the building will begin this week. The Fiske-Carter Construction Company, of Greenville, has the contract for the work and M. A. Cameron is the superintendent on the job. There will be from 250,000 to 300,000 brick used in the construction.

Dalton, Ga.—Crown Cotton Mills, of this city, which manufacture osnaburgs, ducks, sheetings and drills with 50,000 spindles and 938 looms, have been operating during the past spring and summer, such as very few mills in the South have done. They have been running full time all during the past year, with business good all along, and at times several of their departments were active at nights for certain peridos. Monday night they resumed operations of the spooling and working department in Mill No. 2. This is a department now composed of new Barber-Colman machinery, with two more automatic spoolers and one warper yet to be added to this department.

Danville, Va.—The seventh annual meeting of the Industrial Democracy of the Riverside and Dan River Mill Co., Inc., has been held, with the election of officers and the House of Representatives and Senate featuring. The annual election of half of the membership of the House took place early in July, voting stations having been established in various sections of the mills.

A joint session will be held in a short time. H. R. Fitzgerald, president of the corporation, is announced to make the principal address.

Teach Textiles in High School.

LaGrange, Ga.—A special course in textiles is contemplated for the grades of the Junior High School of the Southwest LaGrange High School for the coming year.

This course will be in addition to the regular work of preparing the pupils for Senior High School and will probably consist of an elementary survey of the textile industry, industrial geography and history, textile arithmetic and rudiments of designing, cotton grading and other textile processes.

Laundry Research and the Textile Industry

(Continued from Page 15)

the fibres employed in such a weave are good grade linen, well and good, but if cotton is used or if short broken linen fibres are utilized, they are worn away quite easily. This condition is aggravated if a loose weave is employed, thus permitting the threads to be easily disturbed and moved out of place. And here we have the ideal combination which in time will produce thin places, broken selvages and holes. A loose weave, short fibres, and long floats cause much table linen to wear out after only a comparatively brief period of wear. In some instances it has been found that manufacturers have used a few cotton warp threads near the selvage in order to avoid paying the present high duty on imported Irish linens. Naturally the wearing qualities near the selvage have been reduced and the laundry has suffered from unjust criticism.

What makes it so trying to the laundry owner is that table linen comes to the laundry, as a rule, badly stained and soiled. Grease and dirt, coffee, tea, fruit and worst of all, cream stains are present and must be removed. And so even when it is known that table linen is likely to give trouble, it is impossible to shorten the length of the wash, because the linen must be returned to customers fresh and clean and free from stains.

Shirting.

Another problem that at present is giving laundry owners something to think about is a certain type of shirting consisting of a cotton warp and a natural silk filling. To the layman the silk is hardly noticeable. The result is that shirts made of such material are sent to the washroom as a 100 per cent cotton garments. Instead of being laundered at 100 degrees F. with the best grade of neutral soap obtainable, these garments are laundered at a temperature of 140 to 160 degrees F. with soap and soda. If washed with white shirts and given a very weak bleach with Javel water the results are obvious. The shirts are ruined and the laundry owner has another claim to settle. Such occurrences by no means are confined entirely to shirtings but happen with alarming frequency when laundering pajamas and woven underwear, both for men and women. And mark please that such garments show practically no evidence that silk is present except with the closest examination, but give every appearance of being mercerized cotton and nothing more.

So much of this type of damage has been called to our attention that as early as April a letter was written to the National Association of Shirt Manufacturers stating the seriousness of the problem from a laundryowner's point of view and asking if something could not be done. To date Cluett, Peabody & Co., of Troy, N. Y., alone see our viewpoint. Arrow shirts that consist of a cotton warp and a silk filling have the words "Wash in Warm Water with Mild Soap" stamped in the neckbands. That is a spirit of co-operation every laundry owner appreciates.

Knit Underwear.

Too often has father sent his new suit of underwear to the wash only to have it returned to him so small that little Johnnie discovers that he not only must wear dad's old suit cut down to size, but must wear his shrunken underwear as well. And if the suit has been laundered by a power laundry, a certain laundry owner and all his henchmen are mentally assigned to perdition. In fact, for years it was considered the best of form to blame the laundry for all shrinkage. However, the problem always has been a mystery to the laundry owner. For instance, he would launder a hundred suits in a wheel, each piece receiving identically the same treatment and in spite of all he could say or do, one or two suits would shrink. And truly he could not be blamed if he felt that the public was censoring laundries a trifle severely. He admitted that there were processes in laundering which would affect shrinkage of knit underwear greatly, notably the methods employed for washing and drying, but he felt strongly that manufacturing had something to do with the problem as well.

In the good old days knit underwear manufacturers felt that the

laundry industry was entirely at fault in the matter. And the laundry owner was just as frank in his criticism of knit goods manufacturers and their products. And so it was not long before manufacturer and laundry owner got together and began to see that there are two sides to every question. As you probably know, the latest step taken has been a conference at the Bureau of Standards, called early last May. At that conference, which was called through the energy of Roy Cheney, Secretary of the Associated Knit Underwear Manufacturers of America, were represented the underwear manufacturers, silk houses, retailers soap makers, Good Housekeeping Institute, laundry owners, a number of magazines, and the Bureau of Standards.

As a result of that conference it has been decided to study shrinkage from a manufacturing viewpoint at the Bureau of Standards and from a laundering point of view at Mellon Institute.

First will be studied the effect of twist upon shrinkage. We know already, for example, that a soft twist is employed in the manufacture of knitting yarns, whereas a hard twist is used in making the ordinary weaving yarns. We also know that the softer the twist the greater the shrinkage, which explains why a knit garment shrinks to a greater extent than a woven fabric, when laundered under identical conditions. It is proposed to knit up a number of styles of underwear using different count yarns and varied twists. Squares 15 by 15 will then be marked accurately on each piece and the stretch strain curve determined. After laundering and again obtaining the stretch strain curve the squares will be measured accurately and the changes noted. In this way will be found the twist of yarn producing the least shrinkage and that consequently is best adapted for the manufacture of knit underwear.

Second, the effect of courses per inch will be studied. As is probably well known, the face of a suit of knit underwear shows the sides or vertical components of the loops. These form longitudinal lines along the fabric that are known as wales. The back of the fabric shows the semi-circular horizontal components which are termed courses. The number of wales are obtained by counting them on the face; the number of courses can best be counted on the back. It is also known that courses have an apprecable effect upon shrinkage, for the fewer the courses the greater is the shrinkage. That is, a suit of underwear having but ten courses to the inch will shrink to a far greater extent than one made up with thirty to the inch.

Third, will be studied the effect of tension in the knitting machine. This is a manufacturing problem pure and simple. Knit underwear is manufactured in the tubular form and is composed of a series of loops hung in rows one upon the other. They are constructed from curvings of a single thread, which runs continuously through the fabric. As one row of loops is formed it depends for strength and support on sets of stitches above and below it. Because of its nature, knit goods has many advantageous features, such as great elasticity and stretch and is thus able to yield to the slightest movement of any part of the body. The loops just mentioned are formed under tension, causing the yarns to stretch somewhat, depending a great deal upon their elasticity. This is one supposition which has been offered to explain why woolen knit goods are more likely to shrink than cotton, since the woolen or worsted yarns are far more elastic than cotton yarns and hence stretch to a greater extent under the tension of the knitting machine. However, the properties of the wool fibres themselves enter the problem as well.

Fourth, the relation of dimensions of garments to size will be studied. This is following the policy of progressive knit underwear manufacturers to adopt a "standard size program," so that when a customer goes to a store and asks for a size 36 suit it will mean as much as if he should ask for a 14½ collar. This is welcome news to the laundry owner, who feels that a great deal of shrinkage will disappear once a "standard size program" is put into effect.

And fifth, will be studied the effect of laundering upon knit underwear. We intend to run numerous tests with suits of underwear to study the effect of hard and soft water upon the shrinkage, the effect of varying temperatures, the action of detergents and the amounts used, and the effect of different water levels in the washwheel. Next will be studied the action of drying, especially at varied temperatures, and the effect of heat in the tumbler. Pressing also will be studied closely.

From this brief consideration of the Shrinkage Conference at the Bureau of Standards, I am sure that it is apparent that a great deal of information will be brought to light when our tests are finally completed. I believe it also is apparent that as a result of this conference we have a striking example of just what co-operation can man. It speaks well for industry when a group of manufacturers on the one hand and a group of laundry owners on the other, can get together to investigate a troublesome problem, the solution of which will be of benefit to one and all; and all, in this case, includes the consuming public.

Hosiery.

There is another classification of textiles which sometimes causes the laundry owner and the housewife trouble. Woolen stockings will shrink, supposedly fast shades will run, and delicate tints will almost disappear after a few launderings. These things will happen when the greatest of care is taken. But when we consider the various types of stockings it is not hard to understand why it is sometimes difficult to launder them successfully. Stockings which are sold over the counter may consist entirely of cotton,

(Continued on Page 32)

Faults and Remedies in Combing

(Continued from Page 23)

feed-roller ratchet wheel; clearer falling off feed roller; stud actuating the stroke of feed roller worked loose and fallen out; nippers closed owing to bowl under the pig foot having got out of position.

Broken Clutch Wheel.—When this happens on the Nasmith comber, the end of the back detaching roller should be observed as to whether it is bent; if it is, it must be straightened during the repairs. There must be no back lash in the carrier connecting the two bottom steel detaching rollers, else a bad piecing will result. A broken clutch wheel may be caused by a badly-worn cam. If the clutch wheel has only about four consecutive teeth broken, it is sometimes possible to continue its use by regearing it with the quarrant to avoid the broken teeth meshing.

Cotton Coming Through in Lumps.—Not enough tension on the feed-roller springs, or the feed-roller lever lifted up or broken.

Waste Gathering on Needles.—Circular brush loose on shaft; key slipped out. of doffer; loose set screw in worm wheel; worm not meshed wiht the worm wheel; hooked cylinder needles; faulty waste brushes; excessive speeds and poor quality of cotton; brush-covering tins not set properly; cushion plate forced too far down and fouling cylinder needles; trunk of waste aspirator loose at joints. When the waste is not properly removed from needles, inefficient combing results.

Lap Running Slack on Lap Rollers.—Pawl actuating feed-roller ratchet one tooth too little. Pawl may want filling or renewing.

Shall New Jersey Talk About South Carolina?

(Continued from Page 24)

determined to eliminate something that absolutely does not exist, and I can but wonder what she intends to do about the child labor now existing in her own State.

The following are extracts from a report made October 11, 1923, by Miss Grace Abbott, who will have charge of the enforcement of the Federal Child Labor law if enacted.

They are from Children's Bureau Publication No. 132 entitled "Work of Children on Truck and Small-Fruit Farms in Southern New Jersey."

"In the 243 local families interviewed were 445 children who had worked on truck farms during the preceding year, 345 of whom lived on farms, and 100 of whom came from nearby settlements. The workers ranged in age from 5 to 15 years, 76 per cent of the group being under 14 and 20 per cent less than 10 years of age. It might be expected that children going away from home to the farms for work by the day would average older than the farm children, but there was practically no difference between the groups in this respect—21 per cent of the former as compared with 19 per cent of the latter were under 10 years of age. Many of the older children had worked in the fields a number of years. Thirty-three of the 106 children who were 14 or more years of age when interviewed had started field work before they were 10 years of age and 53 before they were 12. A report on hours could be obtained for only 60 of the 117 children under age of 10. Of this number 33, 9 of them being under 8 years of age, had worked more than 8 hours."

"Of 261 children from 10 to 13 years of age reporting hours, 155 had worked more than 8 hours, and, of 105 14 years of age and over, about three-fourths had worked that long. The working day was practically the same for girls as for boys."

"A notable proportion—27 per cent—of the local children reporting on the length of their working day worked more than 8 hours a day, including 23 per cent of the children working on home farms and 34 per cent of the others."

"Of the 345 farm children, 14 per cent, including two girls, had plowed during the year covered by the study. Almost half the workers were under 14 years of age, including three small boys of 11. A lightweight child is in danger of being jolted from the seat and injured, especially if the ground is rough, such an accident being particularly to be feared with disc plows, as there is the possibility that if thrown the child will fall in the way of the moving discs."

"The group of children going out to the farms for the work of weeding or hoeing included more boys than girls. Although less strain is involved in weeding and hoeing than in the machine operations, either task, if done for any length of time, becomes extremely fatiguing, as the muscles of the back grow tired and stiff from the continual bending. Moreover, the work has to be done at a time of year when the heat is often intense, adding much to the discomfort of the worker."

"Children engaged in setting out onions crawl along on their hands and knees pressing the bulbs into the softened soil, and, as the work is sometimes begun as early as the latter part of February when the ground is still cold and damp, they run considerable risk of illness."

"The 'feeders'—two to a machine—(a transplanter)—sit on small seats only slightly raised from the ground with their legs stretched out in front of them, and as the machine moves along they alternate in dropping plants into a furrow at intervals indicated by a spacer. Children who have worked on these machines

complained of becoming tired and cramped, as there is no way of changing their position. They sit so close to the ground, also, that on dry days they work in a continual cloud of dust stirred up by the machine in its prog-

"The hardest work that children have to do during the harvest season is probably tomato picking. The worker does not sit down, as the fruit is scattered, and as the vines are weighted to the ground continual bending over is necessary.

The greatest hardship involved in the work, however, is the weight of the baskets. The five-eighths bushel hampers when full of tomatoes weigh around 40 pounds. Even women sometimes complain that after a day of lifting tomatoes onto a wagon they are completely exhausted. Thirty-five per cent of the children included in the study have taken part in tomato picking during the year."

"Children living on farms had spent more days at work than had children hiring out who did not live on farms, as was to be expected from the fact that the children of farmers and farm laborers did a greater variety of work."

"The earning capacity of the child was determined to a large extent by his age. Few children under 10 years of age were able to give any account whatever of their earnings, and most of them probably earned little or nothing."

"Of the 23 children ranging in age from 10 to 11 years who reported their earnings only 7 had earned 15 cents or more an hour and almost half had received less than 10 cents."

"A considerable part of the work on truck farms has to be done in the spring and fall at a time when the schools are in session, in spite of the fact that school terms in some of the schools are very brief. Many children drop out for work early in the spring and do not return until late in the fall.

All of this and more Miss Grace Abbott says about child labor in New Jersey and in the summary says:

"The need of some legal restriction on the age at which children may be employed on the farms and for some limitation of their hours of work would seem to be indicated by the facts revealed in the study."

At the Conference of Child Labor Standards held at Washington, D. C., Mrs. Julia C. Lathrop, chief of Children's Bureau, said:

> "The great advantage for us in discussion of this English measure (the Fisher Bill) is that it shows us a way to standardize education in the interest of the future and at the same time to get rid of the one thing we have never dared attack—rural child labor."

Mrs. Feickert is a valiant foe of the employment of children of 6 and 7 years of age in the cotton mills of South Carolina and Georgia, a condition that does not exist. Miss Grace Abbott says that children of 5 years of age work in New Jersey truck farms and that 20 per cent of the workers are under 10 years and 76 per cent under 14. Will Mrs. Feickert dare attack child labor in her own back yard.

Yours truly,

Southern Textile Bulletin,
David Clark, Editor.

California to Compete to Get New England Cotton Mills.

The South will have to look out for a lively competition in securing New England cotton mills, for Daniel J. Sully, who has been living in Los Angeles for several years, has identified himself with an effort that is being made in that city to secure New England capital and New England textile mills to build cotton mills in Los Angeles. With the development of Los Angeles and Sully's acquaintance with the whole cotton situation, the South may expect to meet a very lively competition for New England industries, and if it wants more New England mills and New England capital it will have to hustle at a very lively pace.—Manufacturers Record.

The Draper Corporation, of Hopedale, Mass., manufacturers of looms and cotton mill machinery, are adding to their power plant by the installation of two Taylor stokers with steam ash dump under 600 horsepower boilers.

Laundry Research and the Textile Industry

(Continued from Page 29)

silk, or wool. Then again they may consist of cotton and silk; wool and silk; cotton and artificial silk; cotton and wool; wool and silk and cotton or wool, artificial silk and cotton. And now we begin to understand why the hosiery dyer has a rather unenviable position. Given a conglomeration of fibres, he is asked to produce fast solid shades and two-toned effects. In many cases this is asking him to perform the impossible because of the nature of the dyestuffs he must handle. The result is he does the next best thing and obtains the shades required, with colors that are not particularly fast to washing. He cannot help himself.

There still is a great demand for cotton hosiery, especially for children. Black is the chief color and today is dyed for the most part with sulfur black. Such shades are fast to laundering. With the exception of white, brown and blue are practically the only other shades applied to cotton hose, and are dyed with direct cotton colors. Such shades are not fast to laundering. Faster dyestuffs are not used because of difficulty of application or because of high price. It does not pay the manufacturer to use expensive dyestuffs for coloring cheap products.

The demand for silk hosiery and cotton-silk hosiery has grown tremendously. During the last few years enormous quantities have been sold, the greatest seller being black. When silk and part silk hose are dyed with direct black we again have shades which generally are not fast to laundering. If diazotized and developed colors are used superior fastness is obtained.

Direct cotton colors are chiefly used for silk and cotton. Many of these are not fast to laundering, but others dyed direct or aftertreated give better results. Of recent years there has been a growing demand on the part of the consumer for light shades. This has caused the hosiery dyer a great deal of trouble, due to the difficulty of obtaining level shades. Generally, direct colors are used for such shades as well, although acid colors and small amounts of basic dyestuffs may be used for shading purposes. The great difficulty experienced in dyeing such shades is getting the toes and heels of the stockings thoroughly penetrated. Due to the fact that most dye houses use soft water, which is alkaline, it is impossible to use neutral dyeing acid colors unless a small amount of acid and a quantity of salt is added to the bath.

All-wool hosiery should give little trouble to the laundry if care is taken when washing the material. In many instances, solid shades are produced, fancy effects being obtained by the use of clocks. Heather mixes of fast colors are also to be had. In fact, there is no excuse for an all-wool stocking bleeding or failing to withstand the washing process as there are plenty of fast American-made dyestuffs available on the open market. These same remarks hold true of wool and silk mixes as well.

When wool and cotton mixes are employed, fastness depends entirely upon the colors used. Direct cotton colors are generally used for solid shades. Two-tone effects on cotton-worsted hose are difficult to dye in a single bath, and as a consequence a two-bath method usually is employed. The wool is first acid or chrome dyed and the cotton is then colored cold with direct colors which do not stain wool at such a low temperature. Wool and artificial silk hose are dyed in the same manner as wool and cotton stockings, although in the case of solid shades the artificial silk absorbs more of the direct color than cotton would under similar circumstances. To offset this the dyer adds a little neutral dyeing colors to bring his wool up to shade.

In this brief manner we have considered the many types of hosiery now in vogue as well as the numerous classes of dyestuffs which the dyer must use. In many cases the shades produced are fast, but certain shades, especially tints on mixed fibres, are as likely as not to prove fugitive to laundering. The laundry owner, to meet this condition, has lowered the temperature of the wheel, confined himself to soap alone as a detergent, has shortened his time of washing to its lowest possible limit, and in spite of this colors will fade. And in this connection, let me say that imported hose is no better. We have had numerous samples of hosiery stamped "Made in England" that bled far worse than domestic makes. Except in rare cases the American dyer is doing his utmost to produce the fastest possible shades. That he can do no better is due to dyestuffs, which, in spite of their forty-five years advantage, even German chemists have failed to produce.

From these comments which I have made relative to table linen, shirtings, knit underwear and hosiery, possibly many of you are thinking that I am givng the laundry a clean bill. Far from it. When we find at Mellon Institute that a laundry is at fault, we say so frankly. Like everyone else, laundries make mistakes. But for all that, as I have tried to point out, certain garments will shrink, fade, or give way in spite of all that can be done. And it is this type of damage that the laundry owner seeks to avoid in the future. Every industry should live to a certain extent in the future. The past is dead, and the present soon becomes the past. The Laundryowners' National Association realizes this fact and for this reason is deeply interested in research work and in textile problems. It seeks to place science in the washroom, which, in the final analysis, is the heart of the laundry industry. It seeks to co-operate gladly with textile manufacturer, supply house and consumer. Co-operation with the Associated Knit Underwear Manufacturers of America is proof enough of this.

U. S. Dye Production Largest in History

Washington.—The 1923 production of American dyes, when eighty-eight firms manufactured a total of 93,667,524 pounds, was the largest in the history of the domestic dye industry. Details of this production will be contained in the seventh annual report on the census of dyes and coal tar chemicals soon to be issued by the Tariff Commission. This report not only shows a record output for the year, but outlines the conspicuous progress in the production for the first time in this country of many important dyes and other synthetic organic chemicals, as well as a further reduction in selling prices.

The total sales for 1913 were 86,557,446 pounds, with a value of $47,223,161. Pre-war production in the United States in the year 1914 by seven firms was 6,619,729 pounds, valued at $2,470,096. Among the more important factors responsible for the large 1923 output the following are listed in the report:

1. The activity of the domestic textile and the consuming industries.

2. The occupation of the Ruhr, which caused a reduction in the output of the German dye factories, and consequently enabled the domestic producers to increase their exports of indigo, sulphur black and certain other dyes, principally to the markets of the Far East.

3. The relatively high foreign price levels of dyes compared with those of the pre-war period.

The average sales price of all dyes for 1923 was $5.45 per pound, compared with $.60 in 1922, $.83 in 1921 and $1.26 in 1917, the first year for which a census of dyes and coal tar chemicals was compiled by the Tariff Commission.

During 1923, nearly 100 dyes were produced for which no production in the United States had been shown in 1922. In addition, other dyes, which had been reported previously in small quantities, were manufactured on a substantial commercial scale. These comprise for the most part, dyes of the specialty type, of greater complexity and more difficult and costly to manufacture. New products include dyes for silk, cotton, wool, color lakes, and other purposes, and are representative of the different classes of dyes by chemical classification. The domestic industry, although deficient to some extent in the production of certain vat dyes and other colors, supplies over 95 per cent of the domestic requirements.

The production of vat dyes (other than indigo) in 1923 was 1,766,383 pounds, the largest in the history of the industry, an increase of 690,391 pounds over that of 1922. This class of dyes produces shades of high fastness on cotton goods which will stand the modern laundry treatment. As the public is appreciating more and more the value and importance of fast dyes, the consumption of this group is increasing, and their increased production is a notable development of the domestic industry. The production of synthetic indigo during 1923 was 28,347,259 pounds.

Index To Advertisers

Where a — appears opposite a name it indicates that the advertisement does not appear in this issue.

Lighting As a Part of Better Equipment

(Continued from Page 12)

money. It creates the danger that "later on" you will have to accept a makeshift from which you can only hope for the best. Do first things first, and be sure.

Below are quoted excerpts from some testimonial letters on the advantages of Cooper-Hewitt work-light on production, quality, reduced spoilage and better results.

"The operatives can do better work, especially in the weave room, with Cooper-Hewitt work-light than with the old style of lighting."—Industrial Cotton Mills Company, Rock Hill, S. C., manufacturers of quality blue denims.

"We believe that we have been able to decrease the percentage of seconds as well as waste materially by the use of Cooper-Hewitt lamps."—Hanes Hosiery Mills Company, Winston-Salem, N. C., manufacturers of fine quality hosiery.

"When the operators became accustomed to Cooper-Hewitt light they found that this peculiar hue so pervaded the shadows that we were able to increase our production materially and at the same time rest the eyes of the employees so that they are not troubled with eye strain."—Walter W. Moyer, Ephrata, Pa., manufacturers of quality ladies' ribbed underwear.

"The principal advantage your lamps have over incandescent or other installations is the most vital one in manufacturing, which is 10 to 15 per cent increase in production while using artificial light. This is accomplished with Cooper-Hewitt lamps which give the operator a clear, shadowless light without eye strain, which increases their efficiency.—Zollinger & Schroth, Inc., Emaus, Pa., manufacturers of quality dress silks.

"We found the Cooper-Hewitt installations all that was claimed for it in economy and efficiency, and as there was naturally a tremendous improvement over our old type of lighting we immediately found a gain in our production and an improvement in the quality of our work."—The Read & Lovatt Manufacturing Company, Weatherly, Pa., quality commission silk throwsters.

"Lighting is an important factor in the knitting industry. We have thoroughly tried out every style, both general and individual, direct and indirect, but never before have been thoroughly satisfied as we are since installing Cooper-Hewitt lighting."—Holeproof Hosiery Company, Milwaukee, Wis., manufacturers of Holeproof hosiery.

"We find them to be more econonomical than the incandescent lights which we had before we installed the Cooper-Hewitt lights. They are more economical in a great many ways and we also find a great increase over our production with these lights and we would not under any circumstances go back to the incandescent lights even if we had to pay twice the amount that we paid for installing the Cooper-Hewitt lights."—W. L. Brubaker & Bros. Co., Millersburg, Pa., manufacturers of quality taps, dies, etc.

English Criticism of Cloths Submitted in Annual Contest

Following the awarding of prizes for cotton fabric collections, in the annual competition of the Lancashire Education Committee, a number of interesting observations regarding the cloths submitted were made:

There was evidence of availability to competitors at the technical schools of improved supply of yarns, and it was hoped that this movement would be permitted to develop. Regard appeared to have been paid to the committee's recommendation that use should be made of highly twisted and special yarns in order to produce crepe de chine, marocain, and novel effects, these being features of equal importance to the production of designs by variety of colored yarns or artificial silk threads. It was again urged, however, that extravagant use of expensive yarns should generally be avoided. Future competitors, too, would be well advised not to regard sheer numbers and variety of specimens as the equivalent of good quality and style. There was still too great a tendency to strive at novelty for novelty at the expense of commercial value. In the matter of fitness for purpose the specimen and descriptions often suggest lack of definite aim at the outset of production. Shirtings are frequently too elaborate both in structure and design, and the dignity of simplicity is thereby lost. Mounting of specimens has improved, but the competitors should always allow for examination of the backs of the cloths.

The committee was particularly pleased to observe distinct evidence of the careful study of the collections of samples supplied annually by the Textile Institute to the technical schools. This was clearly indicated in the competition under review, and if in one instance it might be said that an idea had been borrowed, nevertheless the competitor had succeeded in producing an interesting variation of the original. The institute's annual collection of fabrics consists of specimens purchased each year on the current market and the issues provide useful comparative information to students as to trend of design and structure.

Polish Cotton Imports Decline.

Total Polish cotton imports in 1923 amounted to 113,412,126 pounds, a decline compared with receipts of 126,532,081 pounds in the previous year, reflecting unfavorable industrial conditions, says Assistant Trade Commissioner Elbert Baldwin in a report to the Department of Commerce. Of these amounts 92,631,696 pounds, or 81 per cent in 1923, and 108,029,696 pounds, or 88 per cent in 1922 came from the United States, exclusive of indirect shipments of American cotton included with other cotton in amounts received from France, Germany, England and Italy.

Catawba River Power Turns Spindles of 300 Cotton Mills

Asheville, N. C.—There are now nine waterpower stations on the Catawba River in North and South Carolina, with a capacity of 420,000 horsepower and a storage capacity of 175 billions of gallons of water, serving more than 300 cotton mills 00,000 spindles, A. C. Lee, of the engineering staff of the Southern Power Company, told the North Carolina section of the American Society of Civil Engineers at its closing session here. He described the systematic development of this stream as a source of electric energy from the time of the first small plants in the 80's down to the present time.

"With the two new developments now under construction," Mr. Lee told the engineers, "the Catawba River will be probably the finest example in America, or the world for that matter, of intensive and intelligent development and conservation of a great natural resource."

Mr. Lee had as his subject "The Progressive Development of the Catawba River." At the outset he described the course of the river from its headquarters in the Blue Ridge Mountains on down to Fairfield County, South Carolina, where it becomes the Wateree, thence to its junction with the Congaree sixty miles below where the two form the Santee, which flows into the Atlantic ocean near Georgetown, S. C.

With the exception of small plants to operate neighborhood grist mills there were no waterpower developments on this river until the late 80's, Mr. Lee said. The real development, he said, began after the invention of the electric dynamo and the modern cotton spindle. Up to 1890 power was transmitted direct to the mills, lighting current being furnished by a direct current dynamo.

Mills operated in this way were below the flood line and every year suffered heavy losses due to high water. About this time, he said, men behind industrial development began to look for cheaper power. The alternating current generator and transformer had been invented and made possible transmission of power several miles. "The successful portion of the Portman Shoals hydro-electric plant on the Seneca River and transmission line of ten miles into Anderson, S. C., in 1897 and the operation of the Fries Manufacturing and Power Company plant at Idols, on the Yadkin River, near Winston-Salem, N. C., led the late Dr. W. Gill Wylie and his associates to develop a similar station at Indian Hook Shoals, on the Catawba River, about six miles from Rock Hill, S. C."

This latter plant was completed in 1904 and had an effective head of 25 feet. The power house consisted of eight units, each generator being capable of generating 660 kilowatts at 11,000 volts. This current was transmitted to Rock Hill and Fort Mill, S. C., and Charlotte, N. C., over a 13,000-volt transmission line.

The demand for waterpower increased, Mr. Lee said, and in 1905 the Southern Power Company was organized with a view to developing more power along the Catawba. Several sites were purchased.

The Great Falls plant was begun in 1905 and put in operation in 1906. This had eight double runner horizontal wheels connected to 3,000 kilowatt generators. The power was transmitted over a 44,000-volt transmission line sixty miles to Charlotte. This was one of the first transmission lines with over 13,000 volts.

After completing the Great Falls development, the Rocky Creek station, two miles down the river, was begun. It was completed in 1909 and practically duplicated the Great Falls plant.

The flow of the river was variable, Mr. Lee said, and in 1911 a 10,000 horsepower station was built at Greenville, S. C., and one at Greensboro, N. C., with a third at Mt. Holly the next year.

New industries were being attracted as a result, he said.

With the invention of the thrust bearing the installation of vertical type generators was possible, Mr. Lee said, making it possible to put the units above the flood line. The first turbine of this type was installed on the Catawba River in 1913 at Lookout Shoals station, near Statesville, N. C., three units, each connected with a 10,000 horsepower generator being installed.

The Fishing Creek station was put into operation in 1916, three miles above the Great Falls station and develops 50,000 horsepower at a 50-foot head.

The Bridgewater station begun in 1916 and finished in 1919 is essentially a storage development, he said. This is located in Burke and McDowell counties, near Morganton, and impounded more than 100 billion gallons of water as a result of damming the Catawba and Linville Rivers and Paddy Creek. This water is utilized in the dry months of summer and fall. "Incidentally," Mr. Lee said, "because of its large storage capacity it has great value for flood retarding and had it been in operation during the disastrous flood of July, 1916, it would have prevented to a great extent the loss of life and property." The generating plant here is two units each with a 13,000 horsepower capacity at 135 feet head.

After the Bridgewater station, the Wateree station, near Camden, S. C., was started. This is the largest station the company has, generating 84,000 horsepower at a 72-foot head. During 1922 and 1923 two new waterpower and two new steam stations were added. The first was the Dearborn station at Great Falls with 60,000 horsepower generated on three units. The Mountain Island station, near Mt. Holly, N. C., was the other and has four vertical

units generating 80,000 horsepower. The current at this latter station is generated at 6,600 volts and stepped up to 100,000 by the largest three-phase transformer yet built before going onto the transmission lines. The two steam stations were auxiliary extensions of the Mount Holly and Eno steam stations with generating capacities of 40,000 and 20,000 horsepower, respectively.

The Rhodhiss station at Rhodhiss, N. C., will be completed in 1925 and will have 45,000 horsepower at a 65-foot head, and the new Catawba station is being built directly over the old station and will have a head of 65 feet.

"In closing," said Mr. Lee, "I feel it would not be amiss to turn to what the development of the Catawba River has meant to the Carolinas and the new industrial South. With high tension transmission lines reaching into every part of the Piedmont section of the Carolinas industries have been enabled to locate and develop at such places as offered them the best advantages. With this power available over a large territory at low prices and in any desired quantity, industry has been wonderfully stimulated, and it has often been stated that the power generated on and by the Catawba River has been a determining factor in the remarkable industrial development of the Piedmont section of the Carolinas which we will recognize as the nucleus and center of the industrial South.

"It is interesting to observe that in 1905 only fifteen cotton mills with less than 175,000 spindles were being operated by electricity generated on the Catawba River. Today more than 800 cotton mills with a total of approximately 5,500,000 spindles are being operated by the Catawba, to say nothing of the electricity that is being used in other industries and for lighting and other uses in several scores of cities and towns in the Carolinas."

Westward Drift of Our Manufacturing Industries

The manufacturing industries of the country continue to climb over the Alleghany and Cumberland Mountains into the Mississippi Valley which produces most of the raw material required by them and most of the coal with which to turn the raw material into the manufactured form. Details of the 1921 manufactures of the United States now at hand, by articles and States of production, show, says the Trade Record of the National City Bank of New York, that the westward trend of our manufacturing industries which has been perceptible for years continues.

While the Atlantic coast as a whole still produces a little more than one-half of the manufactures of the entire country, the share produced in the Mississippi Valley as a whole has grown from 19 per cent in 1850 to 38 per cent in 1900 and 41 per cent in 1921. The percentage of the total outturn produced by the three geographic divisions officially designated as "New England, Middle Atlantic and South Atlantic" has declined from about 79 per cent in 1850 to 68 per cent in 1870, 57 per cent in 1900, and 51 per cent in 1921. Meantime the great Mississippi Valley, including the four census divisions of "East and West North Central and East and West South Central," has increased its share of the total outturn from 19 per cent in 1850 to 29 per cent in 1870, 39 per cent in 1900 and 41 per cent in 1921. The other great section, the Pacific and mountain States, has increased its share of the total output from less than 2 per cent in 1850 to 4½ per cent in 1900, and 7 per cent in 1921. If we consider the South as a whole combining the sections designated as "South Atlantic and East and West South Central," we find that the area thus outlined produced, according to official figures, about 13 per cent of the total outturn in 1850, 11 per cent in 1900, and 13 per cent in 1921. The share which the South Atlantic States alone supplied of the country's total fell from about 9 per cent in 1850 to 6 per cent in 1900, advancing to approximately 7 per cent in 1921.

Of course all of the great geographic sections have shown big actual gains during the period in which the value of our total manufactures has grown from a billion dollars in 1850 to 44 billions in 1921. Measured in very round terms the New England States advanced from 283 million dollars in 1850 to 2 billion in 1904, and practically 5 billion in 1921. The Middle Atlantic States advanced their outturn from 432 million dollars in 1850 to 4 billion in 1900 and 14½ billion in 1921; the South Atlantic group advanced from 91 millions in 1850 to 712 millions in 1900 and nearly 3 billion dollars in 1921. The great Mississippi Valley as a whole, including the four areas designated as "East and West North Central and East and West South Central" increased its outturn of manufactures from 194 million dollars in 1850 to 1¼ billion in 1870, almost 4½ billion in 1900 and over 18 billion dollars in 1821. The mountain section has quite naturally shown a comparatively slow growth, though the three States fronting upon the Pacific with their large fruit production and other industries included in the manufacturing group have advanced their valuation of manufactures from 15 million dollars in 1850 to 365 millions in 1900, and $2,430,000,000 in 1921.—National City Bank of New York.

Italian Hemp Production in 1923.

The 1923 Italian production of hemp is locally estimated at between 60,000 and 70,000 metric tons (metric ton equals 2,204.6 pounds) compared with 50,400 metric tons in 1922, Consul Joseph E. Haven, Florence, reports.

Says Cotton Price Is Bigges tFactor for Mills

Robert Amory, in a letter written to J. S. Wannamaker, president of the American Cotton Association, states that the New England cotton mill industry is more concerned about raw material in adequate quantities and at a reasonable price than it is about the question of hand-to-mouth cloth buying. Hand-to-mouth buying, he says, "actually makes better and sounder credit conditions." Mr. Amory's letter, which appears in the latest issue of "Cotton News," is as follows:

"Mr. J. S. Wannamaker,
"Pres. American Cotton Association,
"St. Matthews, S. C.
"My Dear Mr. Wannamaker:

"I am very glad to see in your letter of June 24, that you are immune from this pestilence of pessimism which has spread over the country. I quite agree with you that our industry should rebound as quickly as, if not more quickly than, most other lines of industrial and mercantile endeavor.

"I believe this because, as you say, the European situation is rapidly untangling itself. Not only is Europe straightening out but it is evident that conditions in this country are fundamentally sound. There is plenty of money, and it is cheap. Unemployment is not serious, and it seems impossible to believe that there can be anything but a scarcity of merchandise. The very hand-to-mouth buying, which is complained of, actually makes better and sounder credit conditions. The inflation and over-extension of 1920 does not exist today. Therefore, I am not worried by future business conditions.

"We in New England, however, are seriously disturbed about the question of raw material at a reasonable price.

"A world-wide revival of cotton manufacturing and adequate distribution of cotton goods could possibly bring on a rush for cotton which would not only heavily tax the short supply but might force the price to a level which would again curtail distribution of finished goods. Even should we get a large crop, that crop added to the slender carryover this year would probably not be adequate to meet the demand.

"The supply of cotton of the American type is vital to the cotton manufacturing industry of the world. This fact is well recognized abroad, to-wit: Great Britain's experiments in Mesopotamia in which that empire is seeking to develop a source of supply of its own, rendering the English spinner independent of the American cotton crop.

"The United States has always supplied that modern cotton manufacturing industry with the major part of its supply. The position of the Southern plant is being endangered by the developments of today. The spinners of the Continent and Far Eastern spinners are using the native cottons of China and India in greater degree each year, and are developing other sources.

"I firmly believe that your work in your boll weevil control campaign is one of the most constructive in the allied industries today.

"I trust that this work will continue, and that your measure of success, already noticeable, will increase each year.

"It is only by such methods as these that our supply of cotton can be assured, and the prosperity of your Southern planters be maintained.

"Yours sincerely,
"ROBERT AMORY."

Cotton Spindles in July Less Active

Washington, Aug. 21.—There was a reduction in the number of cotton spinning spindles in operation during July, as compared with June this year, and a further reduction as compared with the same period a year ago, according to preliminary figures, showing activity in the cotton spinning industry, made public today by the Bureau of Census, Department of Commerce.

According to the figures, 37,786,464 cotton spinning spindles were in place in the United States on July 31, 1924, of which 28,710,359 were operated at some time during the month, compared with 29,216,486 for June, 30,493,165 for May, 31,871,665 for April, 32,393,171 for March, 32,683,786 for February and 34,243,817 for July, 1923.

The aggregate number of active spindle hours reported for the month was 5,157,779,726. During July the normal time of operation was 26 days (allowance being made for the observance of Independence Day), compared with 25 days for June, 26½ for May, 25 2-5 for April, 26 for March, 24 2-3 for February, and 25 for July, 1923.

Based on an activity of 8.74 hours per day, the average number of spindles operated during July was 22,697,499, or at 60 per cent capacity on a single shift basis. This number compared with an average of 24,422,892 for June, 25,506,973 for May, 30,177,468 for April, 31,125,530 for March, 33,879,600 for February, and 32,694,740 for July, 1923.

The average number of active spindle hours per spindle in place for the month was 136.

Of the total number in place July 31, 17,216,694 were in the cotton growing States; 18,575,712 in the New England States, and 18,994,058 in all other States.

The total active during July were distributed as follows: cotton growing States, 15,382,664; New England States, 11,823,859, and in all other States, 1,493,836.

Artificial Silk

The success of the efforts of English chemists to produce a substitute fibre that could be spun like cotton is being recognized in the textile industry in England as never before. According to reports from that country six sizable plants, some of them large, in Lancashire have undertaken, or are about to undertake, to put the product on the market. Two materials have thus far been developed which produce a silky yarn and when woven make a salable artificial silk. One is called "viscose" and is produced from wood pulp. The other is known to the trade as "celanese" and is produced out of cotton waste and paper. The Manchester, Eng., Guardian describes the two products as follows: "Viscose absorbs moisture quickly and is consequently very weak in a wet state but if not strained regains its full strength when dry, takes dye like cotton and will not spin finer commercially than eighty deniers (66 cotton). Celanese (cellulose acetate) is much stronger when wet than viscose, is to a great extent water resisting, requires special dyes in many instances and will spin as fine as twenty deniers (260 cotton), which is, in fact, equal in fineness to real silk. Cellulose acetate silk has certain dyeing properties of the greatest interest to the designer. Thanks to the introduction of new dyestuffs, synthetic of acetic acid, cotton will take one color and celanese another when they are both dyed together. In the same way viscose and celanese, or wool and celanese, will take different colors though dyed with one shade. This process, which is known as cross dyeing, is now extensively used in fabrics and some very beautiful effects are obtained in brocades and shot silk two-color designs in mixtures of celanese and various textiles." As the processes are now developed artificial silk costs more to manufacture than cotton, but much enthusiasm is being manifested abroad at the constant improvement in machinery and processes that unite to narrow the margin of cost between cotton and silk. Even now it is possible to put upon the market fabrics made of artificial silk that are chosen in the retail in place of cotton because they please the taste of the purchaser, who is willing to pay the slightly higher price for them in preference to cotton. That has already been demonstrated in the American markets. It is not contended, we believe, that these products are as serviceable as cotton goods, but it is not denied that there is a demand for them and that they are reducing the sales of cotton goods. The annual world output of artificial silk is now placed at between 80,000,000 and 90,000,000 pounds, and the outlook for a greater production is good. This is a small amount in comparison with the world's consumption of cotton, but the industry has apparently deeply stirred the Lancashire mill owners, whether the more because of the scarcity and high price of cotton in recent years than because they believe that artificial silk will shortly be adaptable for all textile uses, for some of which cotton is now considered superior.

Webbing Manufacturers Want to Cut Out Odd Sizes.

Efforts of the cotton duck manufacturers to reduce the present 400 or more widths and weights of "wide" cotton duck to a standard list of some 75, through the cooperation of the Division of Simpliged Practice, Department of Commerce, are being followed by the webbing manufacturers.

It was announced recently at the Division of Simplified Practice that the webbing manufacturers have discovered that they are making an innumerable number of qualities and widths, and that they believe this excessive variety should be eliminated in favor of a group of standard sizes, qualities and widths. As one of the webbing manufacturers' group expressed himself in his appeal to the division:

"Every manufacturing user of elastic webbing today seems to think he must have special grades and special widths of web."

This matter will be considered at a meeting of the webbing manufacturers in New Haven, Conn., on September 9.

Cotton Goods

New York.—Although prices on print cloths and sheetings dropped slightly after the lower cotton prices, they recovered somewhat before the week ended and fairly good sales were made at slightly higher figures. The week's business in fine goods included moderate sales of broadcloths, sateens, voiles and cotton shantungs, but sales of the more staple lines were considerably lower. Considerable business has been offered the mills for the last quarter of the year, but most of it has been refused owing to the uncertainty over cotton prices.

Percales, ginghams and colored goods are still being offered at prices that are considered very low. Denims have sold well through September and stocks of tickings have been substantially reduced.

Many orders were held up Friday and Saturday awaiting the publication of the Government crop report. Buyers hesitated to close deals that were under way and sellers were also reluctant to sell for future delivery. There is apparently a growing sentiment in the market that renewed activity will be noted within the next week or so. Many large buyers have reached the point where they must have more goods for the last three months in the year. Jobbers are also showing more uneasiness over the question of some of the more standard supplies they will need soon and which are known to be in small supply at the mills.

Aside from fairly good sales of 38½-inch 64x60s at 9⅛ cents and sales of 68x72s at 10¼ cents there was little activity in print cloths at the end of the week. There was only a light demand for sheetings, although there were a number of substantial bids from bag manufacturers which mills would not accept.

The situation in tire fabric markets showed no change, with buying activity continuing limited to filling in of immediate needs. In some instances builder fabric is being quoted even with cord prices, but it is still possible to do 1 cent more or less in most cases. Prices as quoted were unchanged.

Some 96x64 Cantons at 17¾ cents had been reported. There have been a few other such intimations in silk and cottons, but generally, the trading disposition has been lacking.

Fancy celanese mixtures, on crepe grounds, had been selling during the week. Some attractive work is being done with this fiber, but several converters say they have learned it can be used well only with colors; when used with white, the white becomes tinted.

Some 34-inch, 64x72, 6.40 yard, pongees sold at 13 cents; 17¾ cents paid for spots of certain 40-inch, 96x100, 7.00 yard, combed lawns.

Spots of 39-inch, 88x140, 5.10 yard, combed sateen sold at 22 cents; 39-inch, 64x88, 5.35 yard, combed twill sold at 17 cents.

Regarding the imported broadcloths, the reports are that, in much of the recent purchase, the sterling has not been bought, because it is so high at present. Converts have been holding back, some say, in the hope of buying their sterling for less.

The domestic quotations reported are about as follows: 112x60 combed at 19½; 128x68 combed at 22½; 144x76 singles at 26; 120x64 two-ply and single, at 31; 144x76 two-ply 100s, both ways at 40 cents.

The imported prices last heard are about: 115x64, super-carded, at 21; 128x64 combed at 24½; 128x66 half combed at 23½ sold; 140x76 half combed at 26¼; 140x76 combed at 27; 144x76 singles at 27.

The John V. Farwell Company, Chicago, says in its weekly review of trade:

"Wholesale dry goods business, notwithstanding the unsatisfactory weather, exceeded corresponding week of last year in orders, both for at-once and fall delivery. Trade conditions are greatly improved for export business and the trend is toward a better domestic situation. Buyers have been in the market in larger numbers during the week. Retailers are ordering colored dress linens freely for spring, 1925. Blankets are selling well for at-once and fall delivery. Manufacturers have advanced prices on some lines of silks. Collections are satisfactory."

Prices current in primary markets are as follows:

Print cloths, 28-inch 64x64s, 7⅜; 64x60s, 7⅛; 38½-inch 64x64s, 9⅝; brown sheetings, Southern standards, 15¾; tickings, 8-ounce, 26; denims, 220s, 22; prints, 10; staple ginghams, 15; dress ginghams, 18 and 21.

The Yarn Market

Philadelphia, Pa. — Both buyers and sellers of yarn were inclined last week to await the publication of the Government cotton report on Saturday before making much further effort to transact business. The effect of the report could not be stated as this report is made. Sales for the week were not large, but inquiry was so general as to lead many factors to believe htat it foreshadows a very substantial buying movement in the early future.

Yarn quotations by dealers in this market shoked a decline early in the week, but most spinners held firm and except in scattered instances showed little disposition to grant concessions. Buyers were little interested in future business after the cotton market declined and most of the business done did not involve orders of more than 5,000 pounds. Knitting yarns were firmer than weaving yarns, especially where prompt shipments are wanted. Combed yarns were in very light demand and prices were slightly lower than during the preceding week. There were fairly numerous sales of weaving yarns for August and September delivery. More interest was shown by plush manufacturers and inquiry from the carpet trades was more general.

Several orders were placed for tinged insulating yarns on numbers, including plied 8s, 12s and 20s, in quantities of about 50,000 pounds each, at 35 cents, 39 cents and 44½ cents, respectively. Lace curtain manufacturers were coming in for lots of about 20,000 pounds each of carded two-ply 20s, 30s and 40s, which were consummated on a basis of 46 cents, 51 cents and 58 cents, respectively.

Manufacturers who purchase yarns in this market are much more encouraged over the business they are getting than they were a few weeks ago, dealers here state, and are more inclined to consider their future requirements than they have been for some time. It is believed that a more definite idea of future cotton prices will result in a general increase in yarn buying. Stocks are generally small here and the continued curtailment is rapidly making for improved business, market factors believe.

Yarn quotations in this market were published last week as follows:

Two-Ply Chain Warps.

2-ply 8s	42½	a43	2-ply 24s	47	a48
10s	43½	a44	2-ply 26s	48	a49
12s to 14s	44	a45	2-ply 30s	50	a51
2-ply 16s	45	a46	2-ply 40s	55	a56
2-ply 20s	46	a46½	2-ply 50s	64	a65

Two-Ply Skeins.

8s	41	a42	40s	56	a
10s to 12s	42	a43	40s ex.	58	a
14s	44	a	50s	64	a65
16s	45	a46	60s	72	a74
20s	45½	a46	Tinged Carpet—		
24s	47	a	3 and 4-ply	46½	a38
26s	48	a	White Carpet—		
30s	49½	a50	3 and 4-ply	40	a41
36s	54	a			

Part Waste Insulated Yarn.

6s, 1-ply	25	a45½	12s, 2-ply	40	a41
8s, 2, 3 and 4-ply	36	a36½	20s, 2-ply	44½	a45
			26s, 2-ply	48½	a
10s 1-ply and 2-ply	38½	a39	30s, 2-ply	49	a49½

Duck Yarns.

3, 4 and 5-ply—			3, 4 and 5-ply—		
8s	41	a	16s	45	a
10s	42	a	20s	45½	a46
12s	43	a			

Single Chain Warps.

10s	42	a	24s	47	a
12s	43	a	26s	48	a
14s	44	a	30s	50	a
16s	45	a	40s	56	a57
20s	46	a			

Single Skeins.

6s to 8s	41	a	20s	45½	a46
10s	42	a	24s	47	a
12s	43	a	26s	48	a
14s	44	a	30s	49½	a50
16s	45	a			

Frame Cones.

8s	42	a43	22s	46	a
10s	42½	a43½	24s	46½	a
12s	43	a44	26s	47	a
14s	43½	a44½	28s	48	a
16s	44	a45	30s	50	a51
18s	45	a45½	30s tying in	48	a48½
20s	45½	a	40s	56	a

Combed Peeler Skeins, Etc.

2-ply 16s	55	a56	2-ply 50s	72	a
2-ply 20s	57	a58	2-ply 60s	80	a
2-ply 30s	60	a62	2-ply 70s	90	a
2-ply 36s	60	a65	2-ply 80s	1 00	a
2-ply 40s	65	a67			

Combed Peeler Cones.

10s	52	a	30s	65	a
12s	53	a	32s	65	a
14s	54	a	34s	67	a
16s	55	a	36s	69	a
18s	56	a	38s	70	a
20s	56½	a	40s	72	a
22s	57	a	50s	78	a
24s	57½	a	60s	85	a
26s	58	a	70s	85	a
28s	59	a	80s	1 05	a

Carded Peeler Thread Twist Skeins.

20s, 2-ply	52	a	36s, 2-ply	62	a
22s, 2-ply	53	a	40s, 2-ply	64	a
24s, 2-ply	55	a	45s, 2-ply	69	a
30s, 2-ply	58	a	50s, 2-ply	74	a

Carded Cones.

10s	47	a	22s	53	a
12s	48	a	26s	55	a
14s	49	a	28s	57	a
20s	52	a	30s	59	a

Part-Time in German Textile Industry.

During the month of May only 5.7 per cent of the 376,476 members of the German Textile Workers' Union were working on a part-time basis. By the end of June this percentage had increased to 30.8, and the union estimated that if unemployment continued to increase at its present rate, only about 30 per cent of its membership would be working on a full-time basis by the end of July, Assistant Trade Commissioner Margaret L. Goldsmith, Berlin, reports to the Department of Commerce. Although the report of the union does not indicate the number of hours per week averaged by the textile operatives, it is believed that a considerable number of plants have already reduced operations to between 35 and 40 hours weekly.

Want Department

30,000 SQUARE FEET WAREHOUSE OR MANUFACTURING SPACE FOR RENT, GASTONIA
RAILROAD SIDING—SPRINKLERS—
FOUR BLOCKS FROM CENTER OF TOWN
30,000 SQUARE FEET AVAILABLE
CAN DIVIDE TO SUIT TENANT
GASTONIA INDUSTRIAL BUILDING CORPORATION
GASTONIA, N. C.
P. O. BOX 383 TEL. 9060

Lady of refinment and experience wishes to charge of village hotel or boarding house for large cotton mill. Reference, Address "Boarding" care Southenr Textile Bulletin.

Wanted

A No. 1 card grinder for 30 Whitin cards and fix drawing and pickers. Must be as much as thirty-years of age, Wire J. F. Walls, Overseer, Fountain Cotton Mills, Tarboro, N. C.

For Sale

1 Keeler Horizontal Return Tubular Boiler, 90 H. P., 60" diameter, 17 feet long. To carry 100 lbs pressure. The Randolph Mills, Franklinville, N. C.

Experienced Overseer of Weaving

wants position. Experienced on plain work, dobbies and jacquards. Fine references. Address A. W. T., care Southern Textile Bulletin.

Overseer of Napping Wanted

to take charge of room on night time. Twenty-eight double acting Woonsocket machines. Apply F. C. Williams, Assistant Superintendent, Roanoke Mills Co., Mill No. 2, Roanoke Rapids, N. C.

COMPLETE DYEHOUSE EQUIPMENT
Special Machinery for Textile Mills.
The Klauder-Weldon Dyeing Machine Co.
Bethayres, Pa.

FOR SALE
10,000 SPINNING SPINDLES
D No. 8 LATEST MODEL
⅞" WHIRL
STANDARD McMULLAN BLADE
VARYING 2 TO 4 YEARS OLD.
IN FINE CONDITION
REPLACED BY TAPE DRIVE SPINDLES

LARGE SUPPLY WARP BOBBINS
TO FIT THESE SPINDLES

SAMPLES SUBMITTED
PROMPT DELIVERY
ATTRACTIVE PRICE

SACO-LOWELL SHOPS
CHARLOTTE, N. C.

Fire Without Having A Cleaning Period On

Thomas W-S-D Grate Bars

For Use with Either Natural, Induced or Forced Draft
FOR DETAILED INFORMATION WRITE

THOMAS GRATE BAR COMPANY
BIRMINGHAM, ALA.

UNIVERSAL WINDING CO.
BOSTON, MASS.
Manufacturers of Textile Winding Machinery

Winding machines for single and ply yarns, cotton, woolen, worsted and silk. Write for circular describing the NEW WIND DOUBLER, also the No. 80 for winding SUPERCONES.

CHARLOTTE OFFICE
804 Realty Building
FREDERICK JACKSON

FACTORY OFFICE
PROVIDENCE, R. I.

—Agents—

Ring Traveler Specialists
U. S. Ring Traveler Co.
159 Aborn Street, PROVIDENCE, R. I.

ANTONIO SPENCER, President **AMOS M. BOWEN, Treasurer**

WM. F. VAUGHAN, Southern Representative
P. O. Box 792 **GREENVILLE, S. C.**

U. S. Ring Travelers are **uniformly tempered** which insures even-running spinning. They are also correct as to **weight** and **circles.** Quality guaranteed.

NEW FLORIDA TRAIN

"LAND OF THE SKY SPECIAL"

VIA

Southern Railway System

Southern Railway announces the inauguration of new train service between the Carolinas and Florida, effective June 28-29, 1924.

SOUTHBOUND		SCHEDULE		NORTHBOUND
5:20 P. M.	Lv.	Charlotte	Ar.	9:30 A. M.
10:55 P. M.	Lv.	Columbia	Lv.	5:40 A. M.
3:55 A. M.	Ar.	Savannah	Lv.	12:45 A. M.
8:15 A. M.	Ar.	Jacksonville	Lv.	8:15 P. M.

This new train will handle through sleeping car between Charlotte and Jacksonville. Asheville and Savannah, Asheville and Miami, Cincinnati and Tampa, via Asheville.

Passengers destined Savannah may board Savannah sleeping car at Columbia and occupy same in Savannah until 7:00 A. M.

Passengers destined to points south of Jacksonville on Florida East Coast Railway and Atlantic Coast Line Railroad, may walk from Charlotte-Jacksonville sleeper to Miami or Tampa sleepers before reaching Jacksonville next morning and avoid change of cars in Jacksonville.

Dining car service and observation car between Charlotte and Columbia.

Through day coach service between Asheville, Columbia, Savannah and Jacksonville.

This new through train goes via Southern Railway to Savannah thence Atlantic Coast Line Railroad to Jacksonville.

For further information and sleeping car reservations call on any Southern Railway Agent.

W. F. COCHRANE
City Ticket Agent
237 West Trade Street
Telephone 20
Charlotte, N. C.

R. H. GRAHAM
Division Passenger Agent
237 West Trade Street
Telephone 3860, Branch 7
Charlotte, N. C.

Forecast Crop of 12,956,000 Bales

Washington, Aug. 23.—This year's American cotton crop, the size of which has been engaging the attention of the textile world since it was planted because of the scarcity of raw cotton, responded to better growing conditions in the first half of August resulting in a forecast of 12,956,000 equivalent 500pound bales, or 605,000 bales more than indicated a fortnight ago, by the Department of Agriculture.

Cotton of this year's crop ginned prior to August 16 amounted to 148,645 running bales, counting round as half bales, the Census Bureau announced in the joint report with the Department of Agriculture.

Condition is 64.9.

The forecast was based on the condition of the crop on August 16, which was 64.9 per cent of a normal. A forecast of 12,351,000 bales was issued August 8 on the condition of the crop, as of August 1, which was 67.4 per cent of a normal, indicating an acre yield of 146.3 pounds. Last year's crop was 10,128,478 bales and condition of the crop on August 25 was 54.1 per cent.

Production By States.

The condition of the crop on August 16 and the forecast of production (in thousands of bales) by States, follow:

Virginia, condition, 62 and production, 38.
North Carolina, 59 and 803.
South Carolina, 59 and 803.
Georgia, 70 and 1,185.
Florida, 72 and 25.
Alabama, 70 and 989.
Mississippi, 65 and 1,039.
Louisiana, 50 and 360.
Texas, 61 and 4,433.
Arkansas, 71 and 1,112.
Tennessee, 72 and 436.
Missouri, 70 and 225.
Oklahoma, 75 and 1,225.
California, 90 and 71.
Arizona, 85 and 106.
New Mexico, 92 and 71.
All other States, 75 and 16.

About 79,000 bales additional to California are being grown in Lower California, old Mexico.

Preparing the Dyebath

Given clean goods and plenty of soft water, any dyer would be in a most enviable position, but there are other things to be taken care of. To charge a dyebath properly the dye to be used should be completely dissolved in a small quantity of hot water, hot enough to ensure dissolving every particle of dye. Any old tub or kettle should not be used, but clean vessels, preferably made of copper or monel metal.

After the dye is dissolved, it should be poured into the dye kettles through a fine cotton strainer to hold back any undissolved particles which may be further dissolved by pouring clean hot water over them. A little time given to dissolving dyes will, in many instances, prevent spotted goods or yarn.

The volume of dyebath in relation to the weight of the yarn being dyed is a matter of some importance. Too small a volume per 100 pound unit is likely to lead to uneven shades, and if the shade is a heavy one, bronziness may result, especially with blacks and blues. The best practice is to work with not less than two and one-half gallons per pound of cotton, and up to three gallons. This volume permits the cotton to circulate with ample freedom. Where the volume indicated is much less, say, as low as 1:15, that is, 1⅞ gallons per pound, grave risks are run; besides, the cotton yarn cannot be properly immersed, and nearly complete immersion is all-important. With piece goods, the condition is different. Here the amount of cloth actually immersed is very small at any one time.

The foregoing quantities refer to open tubs or revolving dye kettles. In the case of package dyeing machines, or in the average type of beam dyeing machines (where the dye liquor is applied under pressure) the volume may be as low as one gallon per pound of cotton.

Feeding the dye to the dyebath should be done at frequent intervals, and as the shade is being gradually built up. This is particularly necessary with medium and light shades, and especially with mercerized cotton, which takes up the dye from its bath very quickly. Slow feeding of dye always tends to produce even shades and more thorough penetration of the yarn. All dye should be in the bath before the actual boiling begins; dye added during the boiling is likely to produce streaks that cannot be corrected by any subsequent treatment.—Dyestuffs.

An Enlightened People

Some people in the North and West have the idea that the cotton mill folks of the South are illiterate and ignorant.

Some of the articles the Nothern-ers and Westerners write make it appear that the textile workers are uninformed and unintelligent.

How we wished these ignorant writers from other sections could have been present at the political meeting at Judson mill Friday night when we heard lots of the mill folks, young and old, criticizing and laughing at the bad grammer used by one of the candidates!

The critics in the North and West do not know that the mill schools of South Carolina are above the average of schools in the United States and far country schools in this nation.

There is mighty little illiteracy left in the mill population of South Carolina. The mill schools and the adult schools have done wonderful work in developing an enlightened citizenship.

Candidates and others who make addresses to the citizens of the mills should be careful to use correct English if they would escape criticism and ridicule.—Greenville Daily Piedmont.

CLASSIFIED LIST OF ADVERTISERS

AIR CONDITIONERS—
American Moistening Co.
The Bahnson Co.
Carrier Engineering Co.
Parks-Cramer Co.

ALBONE—
Roessler & Hasslacher.

ARCHITECTS & MILL ENGINEERS—
Lockwood, Greene & Co.
Sirrine & Co., J. E.

ASH HANDLING EQUIPMENT—
Link-Belt Co.

AUTOMATIC FEEDS FOR COTTON—
Saco-Lowell Shops.
Whitin Machine Works.

AUTOMATIC STOP MOTION—
Eclipse Textile Devices, Inc.

AUTOMATIC YARN CLEANER—
Eclipse Textile Devices, Inc.

BALL-BEARING—
Fafnir Bearing Co.
S. K. F. Industries, Inc.

BALERS—
Economy Baler Co.
Saco-Lowell Shops.

BALING PRESSES—
Economy Baler Co.

BANDS AND TAPE—
American Textile Banding Co.

BANKS—
American Trust Co.

BEAMING AND WARPING MACHINERY—
Draper Corporation.
T. C. Entwistle Co.
Saco-Lowell Shops.

BEAM HEADS—
Mossberg Pressed Steel Corp.

BEAMS (All Steel)—
Mossberg Pressed Steel Corp.

BEAMING COMBS—
Steel Heddle Mfg. Co.

BEARINGS, ROLLER—
Hyatt Roller Bearing Co.

BEARINGS, SHAFT—
Fafnir Bearing Co.
Hyatt Roller Bearing Co.
William Sellers & Co., Inc.
Wood's, T. B. & Sons Co.

BEARINGS, TEXTILE MACHINERY—
Fafnir Bearing Co.
Hyatt Roller Bearing Co.

BELT CONVEYORS—
Link-Belt Co.

BELT TIGHTENERS—
Link-Belt Co.
Wood's, T. B. & Sons Co.

BELTING—
Charlotte Leather Belting Co.
Chicago Belting Co.
Druid Oak Belting Co.
Grant Leather Corp.
Graton & Knight Mfg. Co.
E. F. Houghton & Co.
Edward R. Ladew Co.
I. B. Williams & Sons.

BELT, CEMENT—
Chicago Belting Co.
E. F. Houghton & Co.
Edward R. Ladew Co.
Graton & Knight Mfg. Co.
I. B. Williams & Sons.

BELT LACING—
Chicago Belting Co.
Edward R. Ladew Co.
E. F. Houghton & Co.
Graton & Knight Mfg. Co.

BELTING, LINK—
Link-Belt Co.

BENCH DRAWERS, STEEL—
Lupton's, David, Sons Co.

BENCH LEGS, PRESSED STEEL—
Lupton's, David, Sons Co.

BICARBONATE OF SODA—
Mathieson Alkali Works, Inc.

BLEACHERIES—
Sayles Finishing Plants, Inc.

BLEACHING MATERIALS—
Arabol Mfg. Co.
Arnold, Hoffman & Co., Inc.
Atlantic Dyestuff Co.
Borne, Scrymser Co.
Bosson & Lane.
J. B. Ford Co.
National Aniline & Chemical Co.
Roessler & Hasslacher Chem. Co.
L. Sonneborn Sons, Inc.
United Chemical Products Co.
Wolf, Jacques & Co.

BOBBIN HOLDERS—
Fournier & Lemoine.

BOBBINS AND SPOOLS—
Courtney, The Dana S., Co.
David Brown Co.
Jordan Mfg. Co.
Lestershire Spool & Mfg. Co.
Lowell Shuttle Co.
Mossberg Pressed Steel Corp.
Walter L. Parker Co.
Steel Heddle Manufacturing Co.
——See also Spools & Bobbins.

BOBBIN SAVING TREATMENT—
The Textilac Co.

BOXES—
Wilts Veneer Co.

BOX SHOOKS—
Wilts Veneer Co.

BLOWERS AND BLOWERS SYSTEMS—
Carrier Engineering Corp.
Parks-Cramer Co.

BOBBIN STRIPPER—
Terrell Machine Co.

BRETON MINERAL OIL—
Borne, Scrymser Co.

BUNCH BUILDERS—
Holcomb Bunch Builder Corp.

CALENDERS—
H. W. Butterworth & Sons Co.
B. F. Perkins & Son, Inc.

CALENDER ROLL GRINDERS & NAPPER GRINDERS.
B. S. Roy & Sons Co.

CALENDER ROLLS—
B. F. Perkins & Son, Inc.

CARDS—
Saco-Lowell Shops.
Whitin Machine Works.
Howard Bros. Mfg. Co.

CARD CLOTHING—
Ashworth Bros.

CARD GRINDING MACHINERY—
Dronsfield Bros.
T. C. Entwistle Co.
Roy & Son Co., B. S.
Saco-Lowell Shops.
Whitin Machine Works.

CARRIER APRONS—
Link-Belt Co.

CAUSTIC SODA—
Arnold, Hoffman & Co., Inc.
Mathieson Alkali Works, Inc.

CHAIN BELTS AND DRIVES—
Link-Belt Co.
Morse Chain Co.

CHEMICALS—
Borne, Scrymser Co.
J. B. Ford Co.
International Chemical Co.
Mathieson Alkali Works, Inc.
Seydel-Thomas Co.
L. Sonneborn Sons, Inc.

CLEANING MACHINES—
Carolina Specialty Co.

CLOTH PILERS—
B. F. Perkins & Son, Inc.

CLOTH PRESSES—
Economy Baler Co.

CLUTCHES, FRICTION—
Wood's, T. B., Sons Co.

CLUTCH SPINDLES—
Fournier & Lemoine.

COAL—
Sugar Creek Coal Sales Co.

COAL HANDLING MACHINERY—
Link-Belt Co

COMBS—
Steel Heddle Mfg. Co.

COMBS (Beamers, Warpers, Slashers)—
T. C. Entwistle Co.

COMBERS—
John Hetherington & Sons, Ltd.

COMMISSION MERCHANTS—
Catlin & Co.
J. H. Lane & Co.
Mauney-Steel Co.
Paulson-Linkroum & Co.
Ridley, Watts & Co.
The Farish Co.

COMPRESSORS (AIR)—
Allis-Chalmers Mfg. Co.

CONDENSERS—
Allis-Chalmers Mfg. Co.

CONDITIONING MACHINES—
American Moistening Co.

CONDUIT FITTINGS—
Chicago Fuse Mfg. Co.

CONES, PAPER—
Sonoco Products Co.

CONE VISE COUPLINGS
William Sellers & Co., Inc.

CONVEYING SYSTEMS—
Link-Belt Co.

COOLERS (AIR)—
——See Humidifying Apparatus.

COTTON—
Jackson, Hill & Co.
Lesser-Goldman Cotton Co.
Lineberger Bros.
Rose Bros.
Sanders, Orr & Co.
Stewart Bros. Cotton Co.
Tanner & Jones.
Wm. & York Wilson.
H. H. Wolfe & Co.

COTTON MACHINERY—
Ashworth Bros.
Atherton Pin Grid Bar Co.
Barber-Colman Co.
Carolina Specialty Co.
Crompton & Knowles Loom Works.
Dixon Lubricating Saddle Co.
Draper Corp.
Fales & Jenks Machine Co.
H. & B. American Machine, Inc.
T. C. Entwistle Co.
Hopedale Mfg. Co.
Metallic Drawing Roll Co.
National Ring Traveler Co.
Roy & Son, B. S.
Saco-Lowell Shops.
Stafford Co., The.
Universal Winding Co.
Whitin Machine Works.
Whitinsville Spinning Ring Co.
Tolhurst Machine Works.
Terrell Machine Co.

COTTON MERCHANTS—
F. M. Crump & Co., Inc.

COTTON OPENERS AND LAPPERS—
Carolina Specialty Co.
Saco-Lowell Shops.
Whitin Machine Works.

COTTON SOFTENERS—
Arabol Mfg. Co.
Arnold, Hoffman & Co., Inc.
Borne, Scrymser Co.
Bosson & Lane.
E. F. Houghton & Co.
L. Sonneborn Sons, Inc.
Seydel-Thomas Co.
Wolf, Jacques & Co.

COTTON WASTE MACHINERY—
Saco-Lowell Shops.
Whitin Machine Works.

COUNTERS (Revolution, Hank, Pick, etc.)—
The Root Co.

COUPLINGS, SHAFT—
William Sellers & Co., Inc.
Wood's, T. B., Sons Co.

CRANES—
Link-Belt Co.

DESKS, STEEL FACTORY—
Lupton's, David, Sons Co.

DISINFECTANTS—
Carolina Specialty Co.
L. Sonneborn Sons, Inc.

DOBBY CHAIN—
Crompton & Knowles Loom Works.
Rice Dobby Chain Co.

DOFFING BOXES—
Rogers Fibre Co.

DOUBLERS—
Saco-Lowell Shops.
Universal Winding Co.

DOORS, STEEL—
Lupton's, David, Sons Co.

DRAWING ROLLS—
Metallic Drawing Roll Co.

DRINKING FOUNTAINS—
Puro Sanitary Drinking Fountain Co.

DRIVES, SILENT CHAIN—
Link-Belt Co.
Morse Chain Co.

DROP WIRES—
Crompton & Knowles Loom Works.
Greist Mfg. Co.
Hopedale Mfg. Co.
Mossberg Pressed Steel Corp.
R. I. Warp Stop Equipment Co.

DRYERS, CENTRIFUGAL—
Roy & Son Co., B. S.
Tolhurst Machine Works.

DYEING, DRYING, BLEACHING AND FINISHING MACHINERY—
H. W. Butterworth & Sons Co.
Franklin Process Co.
Klauder-Weldon Dye Machinery Co.
Perkins, B. F., & Sons, Inc.

DYESTUFFS AND CHEMICALS—
Atlantic Dyestuff Co.
Borne, Scrymser Co.
Bosson & Lane.
E. I. du Pont de Nemours & Co., Inc.
Metz, H. A., & Co.
National Aniline & Chemical Co.
Roessler & Hasslacher Chemical Co.
L. Sonneborn Sons, Inc.
United Chemical Products Co.
Wolf, Jacques & Co.

DYE WORKS—
Sayles Finishing Plants, Inc.

ECLIPSE VAN NESS DYEING MACHINE—
Eclipse Textile Devices, Inc.

ELECTRICAL CONTRACTORS—
Huntington & Guerry.

ELECTRIC FANS—
Allis-Chalmers Mfg. Co.
General Electric Co.
Westinghouse Electric & Mfg. Co.

ELECTRIC HOISTS—
Allis-Chalmers Mfg. Co.
Link-Belt Co.

ELECTRIC LIGHTING—
Allis-Chalmers Mfg. Co.
Cooper-Hewitt Electric Co.
General Electric Co.
Huntington & Guerry.
Westinghouse Electric & Mfg. Co.

ELECTRIC MOTORS—
Allis-Chalmers Mfg. Co.
General Electric Co.
Westinghouse Electric & Mfg. Co.

ELECTRIC SUPPLIES—
Chicago Fuse Mfg. Co.
Cooper-Hewitt Electric Co.
General Electric Co.
Westinghouse Electric & Mfg. Co.

ELEVATORS—
Link-Belt Co.

ENGINEERS, MILL—
——See Architects and Mill Engineers

ENGINEERS (VENTILATING)—
Bahnson Co.
Parks-Cramer Co.

ENGINES (STEAM, OIL, GAS, PUMPING)—
Allis-Chalmers Mfg. Co.
Sydnor Pump & Well Co.
——See also Ventilating Apparatus.

EXPERT TEXTILE MECHANIC—
J. D. Hollingsworth.

EXTRACTORS—
American Laundry Machinery Co.
Tolhurst Machine Works.

FENCES—
Anchor Post Iron Co.
Cyclone Fence Co.
Page Fence and Wire Products Assn.

FENCES (Iron and Wire)—
Anchor Post Iron Works.
Cyclone Fence Co.
Page Fence and Wire Products Assn.

FINISHERS—
Sayles Finishing Plants, Inc.

FINISHING COMPOUNDS—
Arnold, Hoffman & Co., Inc.
Borne, Scrymser Co.
Seydel-Thomas Co.

FINISHING MACHINERY—
B. F. Perkins & Son, Inc.

FINISHING MACHINERY—
——See Dyeing, Drying, Bleaching and Finishing.

FIRE INSURANCE—
Fireman's Mutual Insurance Co.

FLAT WALL PAINT—
E. I. du Pont de Nemours & Co., Inc.

FLOOR STANDS—
Wood's, T. B., Sons Co.

FLUTED ROLLS—
Whitin Machine Works

FLYER PRESSERS AND OVERHAULERS—
Southern Spindle & Flyer Co.
Whitin Machine Works.

FLYERS—
Whitin Machine Works.
Southern Spindle & Flyer Co.

FRAMES—
Steel Heddle Mfg. Co.

FRICTION CLUTCHES—
Wood's, T. B., Sons Co.
——See Clutches.

FUSES—
Chicago Fuse Mfg. Co.

GATES—
Anchor Post Iron Works.

GEARING, SILENT FLEXIBLE—
Link-Belt Co.

GEARS—
Dan Gear Co.

GRATE BARS—
Thomas Grate Bar Co.

GRAB BUCKETS—
Link-Belt Co.

GREASES—
Masury-Young Co.
N. Y. & N. J. Lubricant Co.
L. Sonneborn Sons, Inc.

GRINDING AND POLISHING MACHINES—
Roy, B. S., & Son Co.

HANGERS (Ball and Socket)—
William Sellers & Co., Inc.

HANGERS, SHAFT—
Fafnir Bearing Co.
Hyatt Roller Bearing Co.
William Sellers & Co., Inc.
Wood's, T. B., Sons Co.

HARDWARE SUPPLIES—
Textile Mill Supply Co.

HARNESS TWINE—
Garland Mfg. Co.

HARNESS AND FRAMES—
——See Heddles and Frames.

HEDDLES AND FRAMES—
Garland Mfg. Co.
Steel Heddle Mfg. Co.
L. S. Watson Mfg. Co.

HOPPER-FEED HAND STOKERS—
The J. H. Williams Co.

HUMIDIFYING AND AIR CONDITIONING APPARATUS—
American Moistening Co.
The Bahnson Co.
Carrier Engineering Corp.
Parks-Cramer Co.

HUMIDITY CONTROLLER—
American Moistening Co.
The Bahnson Co.
Carrier Engineering Corp.
Parks-Cramer Co.

HYDRO-EXTRACTORS—
Tolhurst Machine Co.

INDIGO DYEING MACHINERY—
H. W. Butterworth & Sons Co.

KNITTING MACHINERY—
Hepworth, John W., & Co.

KNITTING NEEDLES & SUPPLIES—
Williams, Chauncey A.

KNIT GOODS, FINISHING MACHINES—
Kaumagraph Co.
Merrow Machine Co., The.

KNOTTERS—
Barber-Colman Co.
Mill Devices Co.

LAUNDRY MACHINERY—
American Laundry Machinery Co.
Tolhurst Machine Works.

LANDSCAPE ARCHITECT—
E. S. Draper.

LEATHER PACKINGS—
Chicago Belting Co.
Edward R. Ladew Co.
E. F. Houghton & Co.
Graton & Knight Mfg. Co.

LEATHER LOOM PICKERS—
E. H. Jacobs Mfg. Co.

LEATHER STRAPPING—
Edward R. Ladew Co.
Graton & Knight Mfg. Co.

LEATHER STRAPS—
E. H. Jacobs Mfg. Co.

LIQUID CHLORINE—
Arnold, Hoffman & Co., Inc.
Mathieson Alkali Works, Inc.

LOOMS—
Crompton & Knowles Loom Works.
Draper Corp.
Hopedale Mfg. Co.
Saco-Lowell Shops.
Stafford Co., The.

LOOM BEAMS AND HEADS—
Mossberg Pressed Steel Corp.

LOOM DROP WIRES—
Crompton & Knowles Loom Works.
Greist Mfg. Co.

CLASSIFIED LIST OF ADVERTISERS

Hopedale Mfg. Co.
Mossberg Pressed Steel Corp.
Steel Heddle Mfg. Co.
R. I. Warp Stop Equipment Co.

LOOM HARNESS—
Atlanta Harness and Reed Mfg. Co.
Garland Mfg. Co.
Palmetto Loom Harness and Reed Works.
Steel Heddle Mfg. Co.

LOOM PICKERS—
Edward R. Ladew Co.
E. H. Jacobs Mfg. Co.
Garland Mfg. Co.
Graton & Knight Mfg. Co.

LOOM REEDS—
Atlanta Harness and Reed Mfg. Co.
Palmetto Loom Harness and Reed Works.
Steel Heddle Mfg. Co.

LOOM SUPPLIES—
E. H. Jacobs Mfg. Co.

LUBRICANTS—
Borne, Scrymser & Co.
N. Y. & N. J. Lubricant Co.
L. Sonneborn Sons, Inc.

LUG STRAPS—
E. H. Jacobs Mfg. Co.

MACHINERY ENAMEL—
E. I. du Pont de Nemours & Co., Inc.

MANGLES—
American Laundry Machinery Co.
H. W. Butterworth & Sons Co.

MARKERS—
Kaumagraph Co.
Merrow Machine Co.

MERCERIZING MACHINERY—
H. W. Butterworth & Sons Co.

METAL PAINT—
E. I. du Pont de Nemours & Co., Inc.
Wadsworth, Howland & Co., Inc.

METALLIC ROLLS—
Metallic Drawing Roll Co.

METERS—
Allis-Chalmers Mfg. Co.
General Electric Co.
Westinghouse Electric & Mfg. Co.

MILL ARCHITECTS—
——See Architects.

MILL CONSTRUCTION—
David Lupton's Sons, Inc.

MILL LIGHTING—
——See Electric Lighting.

MILL STARCHES—
Arnold, Hoffman & Co., Inc.
Corn Products Refining Co.
Penick & Ford, Ltd.
Keever Starch Co.
Stein, Hall & Co.

MILL SUPPLIES—
Dixon Lubricating Saddle Co.
E. H. Jacobs Mfg. Co.
Garland Mfg. Co.
Textile Mill Supply Co.
Thomas Grate Bar Co.

MILL WHITE—
E. I. du Pont de Nemours & Co., Inc.
L. Sonneborn Sons, Inc.
Oliver Johnson & Co.
Wadsworth, Howland & Co., Inc.

MOTORS—
Allis-Chalmers Mfg. Co.
General Electric Co.
Westinghouse Electric & Mfg. Co.

OILS—
Arnold, Hoffman & Co., Inc.
Borne, Scrymser & Co.
E. F Houghton & Co.
N. Y. & N. J. Lubricant Co.
Klipstein, A., & Co.
U. S. Oil Co.
Wadsworth, Howland & Co.
Wolf, Jacques & Co.

ONE-PIECE FURNACE LININGS—
The Cornish Co.

OPENING MACHINERY—
Carolina Specialty Co.
Saco-Lowell Shops

OVERSEAMING AND OVEREDGING MACHINES—
Merrow Machine Co.

OVERHAULERS—
Southern Spindle & Flyer Co.

PAINTS—
Carolina Specialty Co.
E. I. du Pont de Nemours & Co.; Inc.
L. Sonneborn Sons, Inc.
Oliver Johnson & Co.
Tripod Paint Co.
Wadsworth, Howland & Co.

PARTITIONS, STEEL—
Lupton's, David, Sons Co.

PATENTS—
Siggers & Siggers.

PERBORATE OF SODA—
Roessler & Hasslacher Chemical Co.

PICKERS, LEATHER—
Edward R. Ladew Co.
E. H. Jacobs Mfg. Co.
Garland Mfg. Co.
Graton & Knight Mfg. Co.

PICKER STICKS—
Garland Mfg. Co.

PIPE AND FITTINGS—
Parks-Cramer Co.

PORTABLE ELEVATORS—
Link-Belt Co.

POWER TRANSMISSION MACHINERY—
Allis-Chalmers Mfg. Co.
Hyatt Roller Bearing Co.
Fafnir Bearing Co.
Link-Belt Co.
Morse Chain Co.
William Sellers & Co., Inc.
Wood's, T. B., Sons Co.

PREPARATORY MACHINERY (COTTON)—
Saco-Lowell Shops.
Whitin Machine Works.

PICKERS AND LAPPERS—
Whitin Machine Works.

PRESSES—
Economy Baler Co.
Saco-Lowell Shops.

PULLEYS, CAST IRON—
William Sellers & Co., Inc.
Wood's, T. B., Sons Co

PUMPS—(Boiler Feed also Centrifugal)—
Allis-Chalmers Mfg. Co.
Sydnor Pump & Well Co.

PEROXIDE OF SODIUM—
Roessler & Hasslacher.

PRESSES—
American Laundry Machinery Co.
Collins Bros.

QUILLERS—
Crompton & Knowles Loom Works.
Universal Winding Co.
Whitin Machine Works.

QUILL CLEANERS—
Terrell Machine Co.

RAILINGS (Iron)—
Anchor Post Iron Works

READY BUILT HOMES—
The Minter Homes Co.

RECEPTACLES—
Economy Baler Co.
Diamond State Fibre Co.
Rogers Fibre Co.

RING SPINNING FRAMES—
Whitin Machine Works.
Saco-Lowell Shops.

RING TRAVELERS—
Dary Ring Traveler Co.
National Ring Traveler Co.
Victor Ring Traveler Co.
U. S. Ring Traveler Co.

ROLLS—
The Whitin Machine Works.
Metallic Drawing Roll Co.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.

ROLLER BEARINGS—
Fafnir Bearing Co.
Hyatt Roller Bearing Co.

ROLLER CLOTH—
Best, Edward H. & Co.

ROOFING—
Lupton's, David, Sons, Inc.

ROVING CANS AND BOXES—
Rogers Fibre Co.

ROVING MACHINERY—
Whitin Machine Works.
Saco-Lowell Shops.

SADDLES—
Dixon Lubricating Saddle Co.

SANITARY EQUIPMENT—
Vogel Co., Joseph A.

SANITARY FOUNTAINS—
——See Drinking Fountains.

SASH, STEEL—
Lupton's, David, Sons Co.

SCALLOP MACHINES—
Merrow Machine Co.

SCOURING POWDERS—
Bosson & Lane.
Nichols Mfg. Co

SESQUICARBONATE OF SODA—
Mathieson Alkali Works, Inc.

SECTION BEAM HEADS—
Mossberg Pressed Steel Corp.

SELLING AGENTS (COTTON GOODS)—
Amory, Browne & Co.
Converse & Co.
Curran & Barry.
Joshua L. Baily & Co.
W. H. Langley & Co.
Leslie, Evans & Co.
Tatum, Pinkham & Greey
Wellington, Sears & Co.

SEWING MACHINES—
Merrow Machine Co.

SHAFTING, HANGERS, ETC.—
——See Power Transmission Machinery.

SHAFTING—
Fafnir Bearing Co.
William Sellers & Co., Inc.
Wood's, T. B., Sons Co.

SHELL STITCH MACHINES—
Merrow Machine Co.
B. F. Perkins & Son, Inc.

SHEET METAL WORK—
J. N. McCausland & Co

SHELVING STEEL—
Lupton's, David, Sons Co.

SHUTTLES—
David Brown Co.
Lowell Shuttle Co.
Draper Corp.
Hopedale Mfg. Co.
Shambow Shuttle Co.
L. S. Watson Mfg. Co.
The J. H. Williams Co.

SILENT CHAIN DRIVE—
Link-Belt Co.
Morse Chain Co.

SINGEING MACHINERY—
H. W. Butterworth & Sons Co.

SIZING STARCHES, GUMS—
Arnold, Hoffman & Co., Inc
Atlantic Dyestuff Co.
Arabol Mfg. Co.
L. Sonneborn Sons, Inc.
Stein, Hall & Co.

SIZING COMPOUNDS—
Arnold, Hoffman & Co., Inc.
Borne, Scrymser Co.
Bosson & Lane.

CLASSIFIED LIST OF ADVERTISERS

A. E. Staley Mfg. Co.
Corn Products Refining Co.
Drake Corp.
Hawley's Laboratories.
Seydel-Thomas Co.
United Chemical Products Co
John P. Marston Co.
H. A. Metz & Co., Inc.
Seydel Chemical Co.
Seydel-Thomas Co.
Wolf, Jacques & Co.

SKYLIGHT, ROLLED STEEL—
Lupton's, David, Sons Co.

SLASHER COMBS—
Steel Heddle Mfg. Co.

SOFTENERS (COTTON)—
Arnold, Hoffman & Co., Inc.
United Chemical Products Corp.
Arabol Mfg. Co.
Bosson & Lane.
Wolf, Jacques & Co.
Metz, H. A., & Co., Inc.
L. Sonneborn Sons, Inc.
Seydel Chemical Co., The.
U. S. Bobbin & Shuttle Co.

SOFTENERS—
Arnold, Hoffman & Co., Inc.
Borne, Scrymser Co.
L. Sonneborn Sons, Inc.
Seydel-Thomas Co.

SKEWERS—
U. S. Bobbin & Shuttle Co.
Courtney, The Dana S., Co.
Jordan Mfg. Co.
Walter L. Parker Co.
David Brown Co.

SLASHERS AND EQUIPMENT—
Saco-Lowell Shops.

SOAPS—
Arabol Mfg. Co.
Arnold, Hoffman & Co., Inc.
Klipstein, A., & Co.
L. Sonneborn Sons, Inc.
United Chemical Products Co.

SODA ASH—
J. B. Ford Co.
Mathieson Alkali Works, Inc.

SOFTENERS (Oil)—
Bosson & Lane.
E. F. Houghton & Co.

SOLOZONE—
Roessler & Hasslacher Chemical Co.

SPINDLES—
Draper Corp.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Whitin Machine Works.

SPINNING FRAMES—

SPINDLE REPAIRERS—
Fournier & Lemoine.
Fales & Jenks Machine Co.

SPINNING FRAME SADDLES—
Dixon Lubricating Saddle Co.

SPINNING RINGS—
Draper Corp.
Pawtucket Spinning Ring Co.
Whitin Machine Works.
Whitinsville Spinning Ring Co.

SPOOLS—
David Brown Co.
U. S. Bobbin & Shuttle Co.
Courtney, The Dana S., Co.
Jordan Mfg. Co.
Lestershire Spool & Mfg. Co.
Steel Heddle Mfg. Co.
Walter L. Parker Co.
——See Bobbins, Spools, Shuttles.

SPROCKETS, SILENT CHAIN—
Link-Belt Co.

SPOOLERS—
Draper Corp.
Saco-Lowell Shops.
Whitin Machine Works.

SPINNING TAPES—
American Textile Banding Co.
Barber Mfg. Co.

STARCH—
Arnold, Hoffman & Co., Inc.
Corn Products Refining Co.
Keever Starch Co.
Penick & Ford, Ltd.
Stein, Hall & Co.

STOCKS AND BONDS—
American Trust Co.

STRIPPER CARDS—
L. S. Watson Mfg. Co.

SWITCH BOXES—
Chicago Fuse Mfg. Co.

TEXTILE MACHINERY SPECIALTIES—
Cocker Machine and Foundry Co.
Hyatt Roller Bearing Co.

TEXTILE SODA—
J. B. Ford Co.

TEMPLES—
Draper Corp.
Hopedale Mfg. Co.

TESTING APPARATUS (Fabrics)—
B. F. Perkins & Son, Inc.
Henry L. Scott & Co.

TRANSFER STAMPS—
Kaumagraph Co.

TRANSMISSION BELTS—
Charlotte Leather Belting Co.
Chicago Belting Co.
Grant Leather Co.
Edward R. Ladew Co.
E. F. Houghton & Co.
Graton & Knight Mfg. Co.

TRANSMISSION MACHINERY—
Allis-Chalmers Mfg. Co.
Tolhurst Machine Works.
William Sellers & Co., Inc.
Wood's, T. B., Sons Co.

TOILETS—
Vogel, Jos. A., Co.

TOOL CABINETS AND STANDS, STEEL)—
Lupton's, David, Sons Co.

TRANSMISSION MACHINERY—
Hyatt Roller Bearing Co.

TRANSMISSION SILENT CHAIN—
Link-Belt Co.
Morse Chain Co.

TRUCKS (Mill)—
Diamond State Fibre Co.
Rogers Fibre Co.

TUBES, PAPER—
Sonoco Products Co.

TURBINES (STEAM)—
Allis-Chalmers Mfg. Co.

TWISTING MACHINERY—
Draper Corp.
Saco-Lowell Shops.
Whitin Machine Works.

TWISTING TAPES—
Barber Mfg. Co.

UNDERWEAR MACHINES—
Merrow Machine Co.

VENTILATING APPARATUS—
American Moistening Co.
Parks-Cramer Co.

VENTILATING FANS—
B. F. Perkins & Son, Inc.

WARPERS—
Cocker Machine & Foundry Co.
Crompton & Knowles Loom Works
Draper Corp.
T. C. Entwistle Co.

WARP DRESSING—
Arnold, Hoffman & Co., Inc.
Bosson & Lane.
Drake Corp.
L. Sonneborn ons, Inc.
Seydel-Thomas Co.
Wadsworth, Howland & Co., Inc.

WARP STOP MOTION—
Draper Corp.
Hopedale Mfg. Co.
R. I. Warp Stop Equipment Co.

WARP TYING MACHINERY—
Barber-Colman Co.

WASHERS (FIBRE)—
Rogers Fibre Co.

WASTE BINS, STEEL—
Lupton's, David, Sons Co.

WASTE RECLAIMING MACHINERY—
Saco-Lowell Shops.
Whitin Machine Works.

WASTE PRESSES—
Economy Baler Co.

WATER INTAKE SCREENS—
Link-Belt Co.

WEIGHTING COMPOUNDS—
Arabol Mfg. Co.
Atlantic Dyestuff Co.
Bosson & Lane.
Marston, John P.
Metz, H. A.
Jacques, Wolf & Co.
Seydel-Thomas Co.

WATER WHEELS—
Allis-Chalmers Mfg. Co.

WELL DRILLING—
Sydnor Pump & Well Co

WHIZZERS—
Tolhurst Machine Works.

WINDERS—
Saco-Lowell Shops.
Universal Winding Co.

WINDOWS—
Lupton's, David, Sons, Inc.
Carrier Engineering Corp.
Parks-Cramer Co.
Tolhurst Machine Works.

WINDOW GUARDS—
Cyclone Fence Co.

WINDOW FRAMES AND SASH, STEEL—
Lupton's, David, Sons Co.

WIRE PARTITIONS—
Cyclone Fence Co.

YARNS—
Paulson, Linkroum & Co.
Mauney-Steele Co

YARN TENSION DEVICE—
Eclipse Textile Devices, Inc.

YARN PRESSES—
Economy Baler Co.

YARN TESTING MACHINES—
H. L. Scott & Co.